

Document of
The World Bank

FOR OFFICIAL USE ONLY

Report No. 17308

IMPLEMENTATION COMPLETION REPORT

BANGLADESH

RURAL ROADS AND MARKETS IMPROVEMENT AND MAINTENANCE PROJECT

(CREDIT 1940-BD)

January 22, 1998

Infrastructure Sector Management Unit
South Asia Region

This document has a restricted distribution and may be used by recipients only in the performance of their official duties. Its contents may not otherwise be disclosed without World Bank authorization.

BANGLADESH
CURRENCY EQUIVALENT

US\$1	=	Tk (Taka) 31 (June 1988)
Tk 1	=	US\$0.032 (June 1988)
US\$1	=	Tk (Taka) 42 (June 1997)
Tk 1	=	US\$0.023 (June 1997)

MEASURES AND EQUIVALENTS

1 meter (m)	=	3.28 feet
1 kilometre (km)	=	0.625 miles
1 hectare (ha)	=	2.47 acres (ac)
1 metric ton (m ton)	=	2,205 pounds (lbs)

ABBREVIATIONS, ACRONYMS, AND GLOSSARY

ADB	- Asian Development Bank
CCD	- Credit Closing Date
DANIDA	- Danish International Development Agency
DRDC	- District Road Development Committee
ECNEC	- Executive Committee of the National Economic Council
EEC	- European Economic Community
EIRR	- Economic Internal Rate of Return
FRB	- Feeder Road Type B
GCM	- Growth Centre Market
HBB	- Herringbone Bond (brick pavement)
IDA	- International Development Agency
KfW	- Kreditanstalt fuer Wiederaufbau
LGD	- Local Government Division (of the MLGRDC)
LGED	- Local Government Engineering Department
MLGRDC	- Ministry of Local Government, Rural Development and Cooperatives
MIS	- Management Information System
MRR	- Ministry of Relief and Rehabilitation
NORAD	- Norwegian Agency for Development Co-operation
ODA	- Overseas Development Administration
PD	- Project Director
PIO	- Project Implementation Office

Vice President:	Mieko Nishimizu
Country Director:	Pierre Landell-Mills
Sector Manager:	Frannie Humplick
Staff Members:	Mohiuzzaman Quazi Thampil Pankaj Jaswant Channe

ABBREVIATIONS, ACRONYMS, AND GLOSSARY (Cont'd)

RDP	-	Rural Development Project
RIMC	-	Rural Infrastructure Maintenance Cell
RHD	-	Roads and Highways Directorate of the Ministry of Communications
RRMIMP	-	Rural Roads and Markets Improvement and Maintenance Project
SDC	-	Swiss Agency for Development and Cooperation
SEM&E	-	Socio-economic Monitoring and Evaluation
SIDA	-	Swedish International Development Authority
SRD	-	Strategy for Rural Development
SRR	-	Structures on Rural Road
Upazila	-	Sub-district
USAID	-	United States Agency for International Development
WBM	-	Water Bound Macadam (paving)
WFP	-	World Food Program
Zila	-	District

This document has a restricted distribution and may be used by recipients only in the performance of their official duties. Its contents may not otherwise be disclosed without World Bank authorization.

FOR OFFICIAL USE ONLY

**IMPLEMENTATION COMPLETION REPORT
BANGLADESH
RURAL ROADS AND MARKETS IMPROVEMENT AND MAINTENANCE PROJECT
(RRMIMP)
(CREDIT 1940-BD)**

TABLE OF CONTENTS

PREFACE	i
EVALUATION SUMMARY	ii
PART I: PROJECT IMPLEMENTATION ASSESSMENT	
A. Statement and Evaluation of Objectives	1
B. Achievement of Objectives	3
C. Major Factors Affecting the Project	6
D. Project Sustainability	7
E. Bank Performance	8
F. Borrower Performance	9
G. Assessment of Outcome	10
H. Future Operations	12
I. Key Lessons Learned	12
PART II: STATISTICAL INFORMATION	14
Table 1 : Summary of Assessments	15
Table 2 : Related Bank Loans/Credits	16
Table 3 : Project Timetable	16
Table 4 : Loan/Credit Disbursements : Cumulative Estimated and Actual	17
Table 5 : Key Indicators for Project Implementation	17
Table 6 : Key Indicators for Project Operation	18
Table 7 : Studies Included in Project	18
Table 8A : Project Costs	19
Table 8B : Project Financing	20
Table 9A : Economic Costs and Benefits	20
Table 9B : Economic Costs and Benefits	21
Table 10 : Status of Legal Covenants	22
Table 11 : Compliance with Operational Manual Statements	24
Table 12 : Bank Resources : Staff Inputs	24
Table 13 : Bank Resources : Missions	25

This document has a restricted distribution and may be used by recipients only in the performance of their official duties. Its contents may not otherwise be disclosed without World Bank authorisation.

TABLE OF CONTENTS (Cont'd)

APPENDIXES

- A:** Borrower's Contribution to the ICR
- B:** Economic Re-evaluation
- C:** Socio-Economic Monitoring and Evaluation Study
- D:** ICR Mission's Aide-Memoire
- E:** Map IBRD No: 29273

IMPLEMENTATION COMPLETION REPORT

BANGLADESH

RURAL ROADS AND MARKETS IMPROVEMENT AND MAINTENANCE PROJECT (CREDIT 1940-BD)

PREFACE

This is the Implementation Completion Report (ICR) for the Rural Roads and Markets Improvement and Maintenance Project (RRMIMP) in Bangladesh, for which Credit 1940-BD in the amount of SDR 45 million (US\$62.3 million equivalent) was approved on June 24, 1988 and made effective on May 5, 1989.

The Credit was closed on June 30, 1997, after a one-year extension granted beyond the original closing date of June 30, 1996. Final disbursement took place on November 19, 1997, at which time there was a balance of SDR 3.79 million (US\$5.15 million equivalent); this amount is being cancelled¹. Co-financing for the project was provided by Kreditanstalt fuer Wiederaufbau (KfW) and Swiss Agency for Development and Cooperation (SDC); both these agencies have commented on this document, and their comments have been taken into account.

The ICR was prepared by Mohiuzzaman Quazi, Transport Engineer/Task Manager (SACBF), Thamil Pankaj, Principal Transport Specialist (SASIN), Subhash Seth, Consultant Highway Engineer (AFTT1), Zahed H. Khan, Urban Specialist (SACBF) and Jaswant Channe, Highway Engineer (Consultant) (SASIN); and reviewed by Juan Gaviria, Sr. Transport Specialist (SASIN) and Arun Banerjee, Principal Operations Officer (SACBF). Roziah Baba provided active support in completing the report. The borrower's comments are also included as Appendix to the ICR.

Preparation of the ICR began during the Bank's Supervision Mission conducted in March 1997. It is based on material in the project files. The borrower contributed to the preparation of the ICR by preparing its own evaluation of the project's execution and commenting on the draft ICR.

¹

At present the undisbursed balance is SDR 3,786,716.84. However, the Loan Department (LOAAS) confirms that there is a balance of US\$55,576.97 in the special account that needs to be refunded by the Government of Bangladesh (GOB). When this amount is recovered, it will be converted to SDRs and the present undisbursed balance of SDR 3,786,716.84 will be increased by this amount.

EVALUATION SUMMARY

Introduction

- i. Bangladesh's population is largely rural with over 80% of the population living in rural areas. The modernisation and maintenance of the country's rural infrastructure remains a critical factor in the economic development of Bangladesh. It is one of the poorest countries in the world with a per capita income of about US\$240. Its economy is affected by major transportation constraints caused by a combination of geography, nature and climate, with cyclones and floods a common occurrence. In Bangladesh, where poverty is pervasive particularly in the rural areas, and where the bulk of the population lives, improving rural infrastructure is an important strategy of the Government of Bangladesh (GOB) for increasing and diversifying farm production, for raising incomes and living standard, and for reducing poverty. Under recent and ongoing projects, with considerable IDA and other donor support, GOB has started strengthening infrastructure related institutions and policies, and is making good progress in improving its rural infrastructure, but there is still a long way to go to meet the massive investment needs in the sector of rural development.
- ii. GOB's rural infrastructure improvement projects, funded by different agencies including IDA, form part of a well-articulated rural development strategy focused on rural growth centres selected on the basis of socio-economic importance and potential; the RRMIMP is one of such projects. GOB issued its Strategy for Rural Development (SRD) in 1984, which guided its rural infrastructure investments for the period 1985-95; a recent review by GOB/IDA of the working of this strategy has found that the strategy is sound and has resulted in good regional development, and with minor changes and fine-tuning, should be continued to guide further investments in the sector during the next ten years. In view of the success of the strategy and the first round of projects, various international agencies are now funding follow-up projects. IDA has funded a Second Rural Roads and Markets Improvement and Maintenance project (RRMIMP-2), which was approved by the Board in December 1996.
- iii. The Rural Roads and Markets Improvement and Maintenance Project (RRMIMP), was the first major investment in the sector of rural infrastructure development and the project financed the rural road and market improvements with co-financing from Kreditanstalt fuer Wiederaufbau (KfW) and Swiss Agency for Development and Cooperation (SDC). The project, successfully completed on June 30 1997, assisted GOB in the following: (a) provide improved rural infrastructure in eight districts in Northwest Bangladesh; and (b) develop institutional and financial arrangements to ensure better infrastructure maintenance consistent with the Government's decentralisation policies. The project also succeeded in the rehabilitation of existing roads and bridges, which were damaged during the floods of 1987 and 1988.

Project Objectives and Description

- iv. The project comprised of: (a) improvement of 500 km of feeder roads type 'B' (FRB) to bitumen-surfaced standards and road side tree plantation; (b) construction of improved public facilities - internal roads, paved areas, raised and covered selling areas, drainage, potable water supply and latrines - at 65 growth centre markets (GCMs); (c) construction of 4,000 meters of structures on rural roads (SRR); (d) maintenance of the improved roads; (e) institutional development activities of LGED including construction of a new LGED headquarters building, district offices and laboratories, training, contractor development; and (f) socio-economic monitoring and evaluation of the completed projects. GOB requested, and IDA agreed, to include rehabilitation of works damaged during 1988 floods in addition to 1987 floods. In view of the need to introduce modern systems, standards and procedures, improve local capacity of LGED, contractors and consultants in planning and implementing rural infrastructure projects on a sustainable basis, this project was designed and approved as an experimental project, with an implementation period of seven years, which was subsequently extended to eight years (para. 29).

Implementation Experience and Results

v. The project was successful in achieving its principal objectives within the original cost estimates, though there were initial delays in appointing supervision consultants and disruptions caused by two major floods in the project area. RRMIMP fully achieved all its physical objectives (para. 15) The works completed (Table 5) were: (a) improvement of FRB (496 km); upgrading of FRB (495 km); bridges on FRB (1,079 metres); SRR (4,041 metres); periodic maintenance (150 km); routine maintenance (650 km); and GCM (65 no.), and created a direct employment (18,600 person-years) for the construction and maintenance of rural infrastructure. The quality of the completed works was highly satisfactory and passed the test of 1995 floods. The institutional objectives for LGED were also substantially achieved considering: (a) strengthening of maintenance management of completed rural infrastructure; (b) establishment of good quality standards for road construction with local materials and expertise through trial programs; (c) GOB staff training; and (c) enhanced capacity of LGED and local consultants and contractors. However the financial objectives, i.e. to enhance resource mobilisation for the local bodies (Union Parishads) (UPs) were partially achieved. The financial capacity of UPs is still inadequate to support maintenance activities of completed rural infrastructure, which is currently funded from GOB budget. Although not directly targeted under the project, RRMIMP made contributions in achieving the objectives of poverty reduction (para. 22), and also focused on gender concerns by providing employment opportunities for the destitute women (para. 24).

vi. Besides significantly reducing the transportation costs on improved and upgraded roads, the project also contributed in reducing travel time and providing good riding quality both for the motorised and non-motorised traffic. The construction of SRR showed a remarkable achievement in improving accessibility because the rural roads were initially constructed under the food for work program without the culverts which could not be constructed due to lack of resources. The gaps so created were a major constraint for accessibility on the rural roads. Both motorised traffic and non-motorised traffic, significantly increased on improved roads, favouring among others the poor rickshaw pullers in terms of financial income as well less physical fatigue. Due to improvement of GCMs, spoilage in marketing of perishable goods was substantially reduced. Roadside tree plantation along the improved roads and bituminous surfacing of the unpaved roads, reduced creation of dust and improved the environment in the project area.

vii. The project investments showed high economic returns for the components of rural roads and GCM (para. 41). The average economic internal rate of return (EIRR) for the completed feeder road component is estimated at 26% (Table 9A), compared with 25% estimated at appraisal, and EIRR for the completed GCMs component is estimated at 31% (Table 9B), compared with 10% estimated at appraisal. The economic re-evaluation was based on findings of the Socio-Economic Monitoring and Evaluation (SEM&E) study carried out under the project, and completed in May 1997. The key objective of this study was to monitor and evaluate socio-economic effects of the rural infrastructure (47 FRBs and 65 GCMs), which was developed under RRMIMP in the eight districts. The SEM&E study evaluated the effects of selected 40 FRBs and 10 GCMs through estimating EIRR by comparing pre-development and post-development status of the rural roads and markets along with a series of other specific indicators. The SEM&E study concluded that the development of rural roads and markets has generated several positive impacts (para. 40), which can be easily reflected in the following general pattern: (a) on improved roads transport charges for goods and passengers decreased substantially; (b) generated significant new employment for the rural poor; (c) losses due to spoilage or quality deterioration for perishable items such as fish, meat, eggs, milk, and vegetables decreased significantly; (d) the lease value (bid price) and rentals (toll collection) of the markets went up significantly; and (e) the cost of land near the markets increased significantly. Given the substantial achievement of all the physical targets both in terms of quantity and quality, the overall assessment of the project outcome is satisfactory.

viii. Since most of the civil works covered under RRMIMP included improvement of existing FRBs, construction of drainage structures on feeder roads and rural roads, construction of GCMs and periodic maintenance on existing FRBs, no formal plan of operation was required. However to ensure routine and periodic maintenance of the improved roads is appropriately undertaken, LGED is currently implementing IDA financed RRMIMP-2, which includes, inter-alia, a substantial component on road maintenance and capacity building. LGED's maintenance budget for all roads has been increased progressively from US\$7.5 million in 1992/93 to US\$22.5 million in 1997/98. The resource base for Union Council has also been expanded by giving them 1% of Land transfer fee which will increase their financial capability to improve and maintain rural infrastructure. About 50% of the lease value of markets is now going to UPs instead of 40% previously. LGED has made all necessary arrangements including technical planning and budgetary provisions to carry out the maintenance of roads, SRRs and GCMs, and the follow-up project RRMIMP-2 is addressing to a large extent concerns regarding the sustainability of the project. The Bank performance was satisfactory in the identification and preparation phase. During project implementation, the Bank-Borrower relationship was beneficial and productive. The Bank performance in the supervision of the project was highly satisfactory in both quality and quantity. The borrower's performance has been rated as highly satisfactory for the implementation of both the rural infrastructure component and the flood rehabilitation component.

Key Lessons Learned:

xi. As noted in the report "Bangladesh Rural Infrastructure Strategy Study (1996)," jointly prepared by the World Bank and the Ministry of Local Government, Rural Development and Cooperatives, and widely discussed with various stakeholders, the key lessons learned from the project are as follows:

- Start bidding process for civil works before project starts, and appoint design and supervision consultants prior to Credit approval so as to avoid delays;
- more local community participation in priority setting, design and implementation of the project;
- need to place greater emphasis on the rural road structures;
- New emphasis on developing river jetties to better integrate inland water transport and road transport;
- need to continue with training and equipment support to small contractors, but at the same time pushing to increase contract sizes to enhance contractor output and efficiency;
- early action on land acquisition with suitable compensation procedures;
- greater emphasis on field-level training and implementation of maintenance programs;
- need to overhaul rural market management and leasing systems with greater user participation to improve efficiency and increase revenue; and
- need to strengthen the financial status of local bodies (Union Parishads) in ensuring sustainability of infrastructure maintenance.

x. All these important lessons have already been incorporated into the preparation and design of the Second Rural Roads and Markets Improvement and Maintenance Project (RRMIMP-II), which has been approved by IDA in December 1996 as a follow-up project, and is currently under implementation. This follow-up project is jointly financed with the Swiss Agency for Development and Cooperation (SDC).

PART I - PROJECT IMPLEMENTATION ASSESSMENT

A. STATEMENT AND EVALUATION OF OBJECTIVES

Background

1. Bangladesh's population is 80% rural and the agriculture sector employs round 69% of its labour force directly or indirectly. Land is the main productive asset in rural areas. Infrastructure plays a vital role in supporting economic growth in the rural areas of Bangladesh. Currently, Bangladesh has a stock of 5,200 km of National and Regional Highways, 10,500 km of sub-regional roads (feeder Road type A), 16,400 km of rural Feeder roads Type B, and 102,000 km of rural roads (R1 and R2 types). The condition of these roads, particularly of the feeder and rural road network, is very poor, as most of these roads are earth-roads aching in drainage structures and open to traffic only in the fair season.

2. The Government of Bangladesh (GOB) has followed a consistent strategy in recent years to improve rural infrastructure on a selective basis while also improving its highway network, with emphasis on better integration of the transport sector investments and policy, and better coordination among transport agencies, such as the Roads and Highways Department (RHD) dealing with highways, and the Local Government Engineering Department (LGED) dealing with rural roads. GOB issued a "Strategy for Rural Development" (SRD) in 1984, which enunciated a ten-year strategy (1985-95) based on focusing resources to develop "growth centers" with maximum potential for growth in rural areas, selected on the basis of clearly defined criteria of socio-economic importance and development potential. The SRD also defined Government's rural infrastructure strategy, directed to help growth-center development as its main focus. The rural infrastructure strategy as defined in the five-year plans, in line with the above Rural Development Strategy, has been to focus on improving: (a) Type B feeder roads (FRBs) (also called growth-center-connecting roads) which, by definition, connect selected "growth centers" in sub-districts (Thana) to thana headquarters or the nearest all-weather road; there were 1,400 "growth centers" in the country in 1984, selected from among 8,000 rural market centers; (b) selected other rural roads (R1, R2), which connect villages with growth centers or feeder roads; (c) provision of drainage structures (culverts/bridges) on important rural roads; and (d) market structures and facilities in the growth centers. The "growth-center-connecting roads" is a good concept in selectivity, this being treated as the core of rural roads; though classified as FRBs, they are mostly earth roads and need upgrading into reasonable minimum quality standards to provide expected service. The ten-year program set physical targets for various rural infrastructure improvements, sought to be achieved through a series of well-coordinated Rural Development Projects (RDPs). There were about 8 different RDPs focused on rural infrastructure (some dealing with needs in particular regions/districts, and others dealing with national and institutional aspects) funded by different international agencies, including the RRMIMP (called RDP-7) funded by IDA, SDC and KfW. Most of these projects have been completed, and many agencies (including IDA) have funded follow-up projects, in view of the growing needs in the sector and the good strategy being followed and good implementation progress overall, and good performance of the implementation agency, LGED. IDA Board approved RRMIMP-2 (co-funded with SDC) in December 1996, which is a larger project to be completed in a shorter time-period reflecting confidence gained through the first RRMIMP.

3. A recent review by GOB/IDA of the working of this rural development strategy during 1985-95 (see Bangladesh Rural Infrastructure Strategy Study, published for the World Bank, Dhaka, in 1996) found that while there was considerable shortfall in reaching the original physical targets of the 10-year program, the combined achievement of the projects validated the soundness of the growth center strategy judged from actual results and related regional development data. The review also endorsed the continuation of the strategy over the next ten years (1996-2005), with minor changes in emphasis or fine-tuning, in order to meet the revised new and higher targets for rural infrastructure development reflecting additional

population and regional economic growth. The Government is now continuing with this rural infrastructure strategy into the future, through the Perspective Development Plan for the Country (1995-2010) recently formulated by the National Planning Commission.

4. Transport demand in Bangladesh has grown at a much faster rate than GDP since the mid 1970s; more than 8% per annum for passengers and 6% per annum for freight traffic. A special feature of the country's traffic pattern is that more than half of it is carried by traditional non-motorised modes, such as country boats, and rickshaws and rickshaw vans; the road project designs in Bangladesh take account of this traffic composition.

5. The Rural Roads and Markets Improvement and Maintenance Project (RRMIMP) is IDA's first major investment for the improvement of rural roads with cofinancing from KfW and SDC and implemented by the Local Government Engineering Department (LGED). The project aimed at improving rural infrastructure conditions in eight districts of the Northwest region of Bangladesh and strengthening the institutional capacity of LGED. The project was completed on June 30, 1997 and has been very successful in meeting all its physical targets, in establishing good quality standards for road construction and maintenance which are replicated nationally through other follow-up projects, in improving maintenance systems, in generating good social and economic impact from the investments, in using local materials and expertise, and in enhancing the capacity of LGED and local consultants and contractors. The project investments have made significant economic impact in removing rural mobility and marketing constraints.

Objectives

6. The objectives of the Project, as stated in the Staff Appraisal Report (SAR), were to:

- (a) promote rural development through the reconstruction, upgrading, and maintenance of feeder roads, growth centre markets (GCM) and the construction of structures on rural roads (SRR) in the project area;
- (b) improve resource mobilisation to support Zila and Upazila maintenance activities;
- (c) strengthen the institutions concerned with the development and maintenance of feeder and rural roads and markets; and
- (d) rehabilitate roads and associated structures damaged by the 1987 floods while improving standards to minimise future flood damage.

7. The project comprised of the following: (a) improvements, upgrading and maintenance of 500 km of FRBs in eight districts of Northwest Bangladesh; (b) construction of bridges and culverts on about 650 km of rural roads; (c) planning and improvement of infrastructure (including roads and walkways, drainage, potable water supply, sales platforms and sheds) in 65 GCM; (d) a new Dhaka headquarters building for the LGED; (e) rehabilitation of about 650 km of flood-damaged roads and about 27 km of related bridges, drainage works, and retaining walls; and (f) project support, including: (i) consultancy services for design and supervision, monitoring, a rural transport study, formulating a financial plan to enable districts and sub-districts to fulfil their maintenance responsibilities, and a study to prepare an action plan to reduce damage from future floods; (ii) construction equipment and vehicles; (iii) offices, laboratories and equipment sheds in eight district headquarters; (iv) incremental administrative expenditures (salaries, operating expenses of project offices and equipment) for project execution; and (v) training of GOB and contractor staff.

8. A special feature of the project was that it involved systematic experimentation with different technical options, careful monitoring, feeding project experience onto later components, and, most importantly definition and implementation of institutional arrangements. This was because of the absence of good standards and specifications existing earlier, and this feature provided good results and nationally replicable standards which are being used in subsequent projects.

9. The project area was situated in Rajshahi Division in the north west part of Bangladesh (see Map 29273). It comprised of the three greater districts of Rajshahi, Pabna and Bogra, which are subdivided into the eight districts of Bogra, Joypurhat, Pabna, Sirajgang, Rajshahi, Nawabganj, Naogaon and Natore. The project districts covered an area of 17,500 square kilometres in 65 Thanas (previously called Upazilas), with a combined population of approximately 13.5 million (mid-1985) and an average density of 750 per square km. The project area is typically a riverine alluvial plain covered by silty and clayey sediments. In view of the need to evolve new systems, technical standards, procedures and local capacity of LGED, contractors and consultants in planning and implementing rural infrastructure projects on a sustainable basis, this project was designed, approved and implemented as an experimental project with an implementation period of seven years, which was subsequently extended to eight years.

Evaluation of Objectives

10. All the objectives were appropriate, realistic and relevant to support rural development in the eight districts of Bangladesh. The objectives were consistent with the Government's policy and in line with the 1984 Strategy for Rural Development (SRD). The SRD was designed to achieve its objectives through a series of rural development projects (RDP), each of which covered at least one or more of the three following main elements: (a) rural infrastructure; (b) minor irrigation drainage and flood control; and/or (c) production and employment generation components with emphasis on improving opportunities for the rural poor and destitute women. The project placed emphasis on systematic experimentation with different technical options, careful monitoring, feeding project experience into design of later project activities and most importantly defined institutional arrangement for selection criteria for all project activities. Though the project focused on improving rural infrastructure on a selective basis, it also helped in developing the country's road network to ensure better integration of the transport sector investments and policies.

11. As noted, all the project components were designed in accordance with GOB's 10-year (1985-95) infrastructure improvement program under GOB's "Strategy for Rural Development," (see para. 2 above). This national program was implemented through a series of coordinated projects, of which RRMIMP was part, and as it turned out, a leading part and trend-setter in new standards and approaches.

B. ACHIEVEMENT OF OBJECTIVES

12. The project concept and design were appropriate for achieving all the agreed objectives, although some objectives were substantially achieved and others only partially. The project's major objective of promoting rural development was substantially achieved as the project exceeded all physical targets expected and agreed at appraisal (para. 15). The physical objectives were aimed at upgrading and maintenance of feeder roads, GCMs and SRRs. The objective of implementing cost effective approaches to design, construction and maintenance was also substantially achieved because the quality of completed works was found to be very satisfactory and the maintenance management system was improved significantly.

13. RRMIMP succeeded to: (a) introduce consistent engineering standards and methodologies for both project and non-project activities in the project area; (b) build cost-effective road pavements, bituminous surfacing and reseals on existing pavements; and (c) provide drainage structures to fill gaps on feeder and

rural roads. The objective of rehabilitating the roads and bridges damaged by the 1987 flood, was significantly achieved because; (a) rehabilitation of damaged roads and bridges were added after the project started, and to this effect the development credit agreement was amended on May 24, 1989; (b) all the agreed works were completed to a satisfactory standard and these works withstood the more severe floods of 1995. The objective of improving resource mobilisation to support district and sub-district maintenance activities was partially achieved (para. 19) because the Union Parishads (UP), which are the lowest level of elected Government in the country, have a weak financial base and were unable to find adequate funding for maintaining the infrastructures under their jurisdiction on a sustainable basis. At the start of the project, markets were leased through open auctioning which resulted in low rates due to the influence and participation local muscle men. During the project implementation period, the introduction of standard tendering system resulted in the increase of market lease rates substantially. Under this project, community participation at local level took place partially in the planning and implementation stage of the project; however, based on this experience the ongoing second rural roads project is being implemented through active local community participation at all stages of the project.

14. An overview of the achievement of objectives (summarised in Table 1), is provided below under the following headings: (i) physical objectives; (ii) institutional development; (iii) financial objectives; (iv) sector policies; (v) private sector development; (vi) poverty reduction; (vii) environmental objectives and (viii) gender concerns. The project objectives under items (i) to (iii) were directly targeted under RRMIMP operation; however the other objectives under (iv) to (viii), although directly not targeted, contributed to some extent and can be considered as partially achieved. To monitor and evaluate socio-economic impact of the rural infrastructure developed under RRMIMP, a Socio-economic Monitoring and Evaluation (SEM&E) study was carried out under the project and its findings (para. 40) has clearly demonstrated that the project area was substantially benefited in terms of its economic development and RRMIMP significantly contributed to improve the living standards of the rural poor in the project area. Although substantial number of structures (4,041 meters) on rural roads were constructed under the project, huge number of gaps still remain on rural roads which need to be bridged in future. Some of the markets improved under the project were located on river front but jetties were not constructed to improve the integration of inland water transport with road transport.

15. *Physical Objectives:* All the physical objectives were substantially achieved. 497 kms of FRBs were improved to bituminous standards, compared with 500 km agreed at appraisal. 495 km FRB were upgraded, compared with 200 km agreed at appraisal and 35 (1,079 meters) of bridges were constructed on FRBs compared with 1,223 meters agreed at appraisal. All the agreed 65 number of GCM were improved and 4,041 meters of SRR were constructed, compared with 3,705 meters agreed at appraisal. Under the flood rehabilitation component physical objectives were substantially achieved in all the 28 districts including: (a) 428 km of road rehabilitation, compared with 399 km agreed at appraisal; and (b) 2,374 meters of bridges rehabilitated compared with 1,798 meters agreed at appraisal. The other physical objectives, which were achieved are shown in Table 5.

16. *Institutional Development:* Institutional development objectives were substantially achieved on account of the following remarkable improvements in the functioning of LGED: (i) a computerised financial management system was developed in LGED at its headquarters and district offices to streamline its accounting and financial management for the project activities; (ii) a SEM&E unit was established and later in 1992, it was integrated into the project; and (iii) during the first half of the project, audit reports were not prepared on time and the quality of the reports produced were generally inadequate, and raised a number of queries when submitted to the office of the Auditor General. Therefore during the mid-term review it was decided to appoint private auditors in addition to GOBs regular audit, and their report concluded that different accounting systems were being followed in different field offices. To overcome this problem, the auditing and accounting guidelines have been prepared and 149 accounting personnel were trained, which has resulted in a marked improvement in the accounting system of LGED.

17. *Training:* The training unit of LGED at headquarters was responsible for co-ordination and implementation of the training programs nation-wide through its 25 regional training centres. The project contributed to the national training program of LGED by providing funding for all local and foreign training programs. The variety of courses designed for the staff of LGED focused on road construction, field surveying, material testing, project monitoring, computerised financial management, and computer applications. In addition, the project supported the implementation of some project specific training programs for all levels of LGED staff and contractors. The project also sponsored overseas training courses, study tours, workshops, and seminars for LGED engineers. In all, the project implemented local training for 7,837 staff-days and overseas training for 677 staff-days. It helped LGED staff to improve their technical and managerial skills, which had a positive effect on the quality of work in the field.

18. LGED has built an 11-storied headquarters building (LGED Bhaban), construction of 6 stories of which was jointly financed by GOB, IDA, KfW and ADB. The LGED HQ building provides office space for all its headquarters staff and most of its project offices. At the time of project start in 1989, the LGED headquarters staff were spread through five rented buildings, which were originally designed as upper income apartments, and caused LGED tremendous office accommodation and communication problems until they moved to the new building in late 1996. The project also financed construction of eight district offices with ancillary facilities such as soils and material testing laboratories, training units, workshops and garages. Most of these office complexes now have ample space available, which can be used for other purposes in future if necessary. The other key institutional improvements are: (a) development of a comprehensive database on Geographical Information System (GIS) for all the 464 thanas in the country; (b) development of standardised tender documents and specifications which are now being used in other rural infrastructure projects; and (c) the methodology followed in the SEM&E study is now being used for other projects.

19. *Financial objectives:* The financial objectives were partially achieved. To mobilise financial resources of UPs, a study was carried out on "Upazila Financial Planning" with an objective to come up with recommendations to enhance their capability for financing development and maintenance programmes from their own resources. Its findings and recommendations are being reviewed and implemented under RRMIMP-2. The market toll rates were increased effective from April 15, 1996, for eight districts within the range 11% to 18%, but they were still not sufficient to cover maintenance costs in full.

20. *Sector-Policies:* Though the achievement of sector-policy objectives were not specifically targeted under RRMIMP, the project succeeded to achieve them partially because LGED implemented the following main policy actions: (a) establishment of a maintenance cell to plan, design, and implement a priority routine and periodic maintenance program prepared at the Thana level; (b) enhanced co-ordination between the LGED's proposed Management Information System (MIS) and activities of SEM&E study carried out under the project; and (c) adoption of consistent engineering standards and technical specifications for both project and non-project activities in order to ensure adequate quality control in carrying out bituminous surface dressing, resealing of existing pavements, and construction of drainage structures on feeder and rural roads.

21. *Private Sector Development:* Although the objectives of private sector development were not directly targeted under RRMIMP, the project succeeded in achieving this partially because training was provided to the contractors in the preparation of item-wise bidding and methodical execution of different items of road works to improve quality. The work of periodic maintenance was carried out through contractors and routine maintenance was carried out either through small contracts or by 'lengthman' system. This provided a good opportunity for the contractors to learn modern techniques and to gain experience in the construction and maintenance of road works. During the project implementation period, sizes of road contracts were gradually increased from one km to three km based on contractor's output and efficiency. With strong recommendations from IDA supervision missions, LGED improved its payment

procedures and the time-lag in making payments to contractors was significantly reduced from three months to three weeks. However, labour contracting societies did not benefit as much since their financial position was found very weak.

22. *Poverty Reduction:* Although RRMIMP was not designed as a direct poverty-targeted intervention, the improved roads and GCMs under the project contributed to a great extent as a complementary input in delivering transportation services for the poor. The roads helped the rural poor in the project area in availing the market facilities, schools, health clinics, and other social services. It also provided benefits to the poor communities in terms of savings in transportation costs, reduced travel time and increased revenue from the users of improved markets. The impact of RRMIMP on employment was creation of jobs (18,600 person-years) for construction and maintenance of infrastructure, compared with 12,000 person-years anticipated at appraisal.

23. *Environmental Objectives:* The Project succeeded in achieving the environmental objectives partially as the improved road works and GCMs were able to provide significant improvements in the road drainage and adequate sanitation of markets. The trees planted along the embankments of improved roads further enhanced the environment of the project area.

24. *Gender Concerns:* The objectives relating to gender concerns were not directly targeted under RRMIMP; however, the employment of destitute women on road maintenance and in tree plantation provided a good opportunity for poor women to earn wages and security of continuous paid employment on future road maintenance works.

C. MAJOR FACTORS AFFECTING THE PROJECT

25. *Factors not generally Subject to Government Control:* (a) The devastating floods of 1995 damaged some roads and structures which were completed under the project. However the losses were not major, because the good quality of completed works were able to withstand the effects of the flood. The Banglabazar GCM improved under the project was completely washed away by the Jamuna River during the flood; and (b) the construction season in Bangladesh is limited to about eight months, from mid-October to mid-May. This short season makes it expensive for small scale contractors to maintain permanent staff with technical skills or to acquire and maintain construction equipment.

26. *Factors Generally Subject to Government Control:* (a) delays in the appointment of design and supervision consultants; and (b) delays in dealing with land acquisition.

27. *Factors Generally Subject to Implementing Agency Control:* (a) delays in contractor payment; and (b) no well defined policy in the selection of trainees, particularly for overseas training program.

28. *Cost Changes:* The project achieved all its physical and institutional objectives within the appraisal estimates and allocated amounts. However there were some cost changes in the sub-components of land acquisition, improvement of feeder roads, FRB maintenance, GCMs, equipment, training, flood rehabilitation works and consulting services (Table 8A), all of which were easily met out from the provisions made in the agreed project costs. The cost changes in the sub-components of SRR were substantial (above 100%) because the expenditure under this component was US\$11.6 million, compared with the appraisal estimates of US\$5.4 million. This was primarily due to the much greater demand for SRRs than expected. When this component was first started under RRMIMP as a pilot, it created so much interest among the poor rural communities that it became necessary to provide additional allocation for this component. The additional expenditure under various components were easily met from the provisions of

the physical and price contingencies and RRMIMP succeeded to complete all its project objectives without any cost increases.

29. *Implementation Delays:* The credit was signed on July 29, 1988 and was declared effective on May 5, 1989 after a period of about nine months, because the borrower took a long time in the appointment of the design and supervision consultants, which was one of the several conditions for credit effectiveness. Therefore the civil works on feeder roads, SRR and GCMs could not be started until April 1990. As a result one full construction season was lost. The other reason for this delay was that the contractors were inexperienced, particularly in using the improved system of bidding procedures and the works scheduled to be completed within one construction season was prolonged to two construction seasons. Some delays also occurred due to delay in land acquisition for roads caused by complex and lengthy compensation procedures. However, after the mid-term review, the situation substantially improved and most of the contracts were completed within one construction season as scheduled. With the initial delay of one year and moreover to cover the one year maintenance period liability for the final year contracts, GOB requested and IDA agreed to extend the Credit closing date (CCD) by one year. i.e. up to June 30, 1997, compared with the initial CCD of June 30, 1996.

30. *Changes in Project Scope:* Because RRMIMP was the first large project in the rural development sector, there was a condition in the Development Credit Agreement that no proceeds of the credit would be withdrawn until the Borrower carried out a joint mid-term review of the project performance up to that date with IDA, KfW and SDC, and agreed on an action plan for the remainder of the project. Accordingly a mid-term review was carried out during May 1992 and the physical targets were reduced as follows: (a) improvement of FRBs from 500 km to 350 km; (b) upgrading of FRBs from the existing HBB or WBM to bituminous standards, where shown to be uneconomic, and reduced from 200 km to 7 km; (c) construction of SRR from 3,705 meters to 2,583 meters. However, in June 1994 another review of project performance was carried out, and considering the fact that the project had gained good momentum and LGED's institutional capacity was much improved, the physical targets were reset to the ones initially agreed at project appraisal; also, the target for SRRs was increased to 4,041 meters from 3,705 meters due to greater demand and projected savings from the other sub-components.

D. PROJECT SUSTAINABILITY

31. The project benefits achieved in providing improved all-weather transport system for about 500 km FRBs for 47 roads and improved hygienic trading facilities for 65 GCMs, are substantial in terms of reducing transport cost, and enhancing marketing facilities. The project has maintained about 800 km of FRBs during the project period (650 km routine and 150 km periodic maintenance). The sustainability of the improved rural infrastructure is likely because GOB continues to show a strong commitment in the planning and implementation of rural infrastructure maintenance program. LGED has already appointed one Assistant Engineer in each district and one Sub-assistant Engineer in each Thana for maintenance activities. LGED has set up a national maintenance system, which is being further developed under the follow-up project RRMIMP-2, to ensure its operational efficiency and effectiveness. Currently funds for maintenance of most rural roads and highways come from Government revenue and some UP revenue, and the amount collected from the road users through fuel levies and other charges is estimated to be adequate to cover maintenance needs of the total road network. Recognising the importance of maintenance, GOB has started allocating funds in the revenue budget for maintenance of rural infrastructure since FY 1992-93. The budget allocation for maintenance has increased from Tk 300 million in FY 92-93 to Tk 900 million in FY 97-98. GOB has also agreed with IDA under the follow-up project to progressively increase the annual allocation for rural road maintenance, and GOB is meeting this commitment. Following RRMIMP-1 initiatives, there is clearly a major change of Governmental attitude and commitment towards an effective maintenance policy and actions.

32. To ensure long-term project sustainability, it is important that the local government resources for maintenance should increase progressively. Under the follow-up RRMIMP-2, the resource mobilisation at the UP level has already started with 1% of the land transfer tax allocated to them and by increasing the authority of UPs. Maintenance of markets is adequately financed by direct user charges levied from market users. The on-going use and promotion of labour-intensive technology for maintenance with appropriate hand-tools would make infrastructure maintenance affordable and would enhance sustainability. Given that adequate maintenance funding and arrangements at the national level are already in place, and being further strengthened under the follow-up projects, the project can be rated as sustainable.

E. BANK PERFORMANCE

33. **Identification:** The project was identified in 1981, when the GOB made a request to IDA for financing a RDP aimed at improving rural roads and markets in 3 "old" Zillas comprising 65 upazilas in the Northwest of Bangladesh. Preliminary engineering studies were undertaken by local consultants from July 1983 to April 1985, after which extensive discussions took place between GOB and IDA to ensure that the project scope was consistent with the institutional capacities of the implementing agencies as well as the local construction industry. In April 1987, the FAO/World Bank Co-operative programme Investment Centre issued a project preparation report that recommended a project to upgrade 360 km of FRB, construct 2500m of SRRs and improve 65 markets over an implementation period of 5 years. The project area, which was selected for RRMIMP, was very appropriate because the Government was implementing a rural integrated development project in the same area comprising of irrigation, surface water conservation, pisciculture, afforestation, crop diversification, rural electrification, employment generation and feeder road improvement program. The flood rehabilitation works were identified in the west of the Jamuna River, because ADB was considering to finance flood rehabilitation works on the east side of the Jamuna River. Out of 900 rural markets in the project area, 196 were identified as growth centres, which was used as a basis to select the priority 65 GCMs for further development. IDA's performance in identification of the project was satisfactory, because it focused on the country's economic need, and helped to prepare a well integrated rural development program, which was complementary to the planned development of other sectors in the project area.

34. **Preparation:** IDA's performance in the preparation of the project can be rated as satisfactory because it made full use of the studies carried out in November 1987 under a separate UNDP funded and FAO executed contract, and reviewed the detailed designs and tender documents, which were prepared for the first year work contracts. The project design was appropriate to achieve its objectives through a rural infrastructure component and a flood rehabilitation component. The rural infrastructure component included improvement, upgrading, and maintenance of feeder roads, rural roads, growth centre markets and project implementation support in the form of design and supervision consultants, incremental project staff, vehicles and equipment and office and laboratory facilities in the project area. The rural infrastructure components involved systematic experimentation with different technical options, careful monitoring, feeding project experience into design of later components and most importantly the definition and design of institutional arrangements for project implementation. During credit negotiations a criteria for selection of rural infrastructure projects was agreed and it was adequately followed during project implementation. To ensure adequate and timely attention to the institutional issues, 70% of disbursement on rural infrastructure works was made dependant upon a successful evaluation of experience during a formal mid-term review before the end of Year 3.

35. **Appraisal:** The Bank reviewed the project prepared by the consultants in close consultation with implementing agencies and co-financiers (KfW and SDC) during the appraisal. The appraisal team comprised of IDA and KfW staff and the skill mix of the specialists was appropriate. The need for carrying out a major review was very thoughtful and provided the borrower, IDA and co-financiers a good

opportunity to review project performance and helped to amend the scope of work (para. 30). During appraisal the three major risks were correctly identified and adequate arrangements were made for their mitigation: (a) the risk of institutional inertia from obstructing necessary changes in design and maintenance practices was mitigated with the appointment of design and supervision consultants; (b) the risk of project complexity was reduced by having separate management of the rural infrastructure and flood rehabilitation components; and (c) the risk of basic uncertainties regarding optimal technical solutions, institutional arrangements and financial capacities was correctly mitigated by carrying out intensive monitoring, close supervision and a joint mid-term review of the project. Given that the project had several sub-components, adequate attention was not paid in defining the training program during the appraisal and as a result the selection of candidates were based on ad hoc decisions and no refined policy on selection criteria for the trainees could be decided during the course of the project implementation. In general the Bank performance in appraisal of the project can be rated as satisfactory.

36. Supervision: The quality of Bank supervision was very professional, objectively oriented and based on understanding of the borrowers institutional capabilities and needs and on the basis of IDA policies and procedures. During project implementation, the IDA/Borrower relationship was beneficial and productive. Both the parties responded very positively to the practical needs that arose during implementation. Implementation problems were correctly identified, adequately assessed and appropriate performance ratings in the supervision Form 590 were provided. Credit covenants were complied with. Sufficient and timely advice was given to the implementing agencies and follow up actions were more than adequate. The timing of supervision missions were appropriate and the time spent in the field was sufficient. On the whole, the Banks performance in supervision was highly satisfactory both in quality and quantity, because: (a) it took timely actions in carrying out mid-term review and correctly amended the scope of project activities; and (b) to assess the project's impact and effectiveness, IDA carried out a SEM&E study at an appropriate time, which did not focus only on the main component of FRB but evaluated the impact of the project in terms of all social and economic aspects. The findings and recommendations of the SEM&E study (para. 40) were found very useful in the preparation, design and implementation of the follow-up RDPs.

F. BORROWER PERFORMANCE

37. Preparation: The project was identified and prepared jointly by the GOB, LGED, RHD and IDA with the support of consultants. The borrowers performance in providing the technical data, formulation of the project components and reviewing the project proposal with respect to technical, economical and implementation arrangements was satisfactory. All the sub-components were selected and designed so as to ensure that they fit well within project objectives and were economical to construct and maintain. The selection criteria was agreed separately for the improvement of FRB, upgrading of FRBs, structures on rural roads and GCM. The key criteria for improvement and upgrading of FRBs was, inter-alia; that: (a) the investment must yield an economic rate of return of at least 12%; (b) priority was given to those FRBs which connected growth centres improved under the project but so far did not have all-weather access; and (c) the land required for widening and raising was under the legal possession of GOB before the start of the construction. The key criteria for selecting SRR was: (a) that they were located on roads under a specific maintenance program; (b) upazilas contributed 7% of their costs and payment of the upazila's share of the estimated cost for one year's work was made before calling tenders; and (c) they were on roads which were connected with FRBs and/or markets improved under the project. The key criteria for selection of GCMs was that: (a) the estimated economic benefits from the improvements exceeded the costs of improvement and maintenance; (b) the markets were already on all-weather access; (c) the upazilas had agreed to finance 7% of the costs of the improvements from its own resources and the payment was made before calling tenders; and (d) the upazilas had agreed to seek an increase in tolls charged to users of the improved markets and the Government had approved the proposed increase. The Project Proforma, which is a

mandatory requirement for all GOB's project, and was a condition for the credit effectiveness, was timely approved by the Executive Committee of the National Economic Council (ECNEC). In general, the borrower's performance in preparation of the project was satisfactory.

38. Implementation: The rural infrastructure development component was implemented by LGED and the flood rehabilitation component was implemented by both RHD for works on main roads, and by LGED for works on FRBs and rural roads. A separate Project Implementation Office (PIO) was established within LGED, which was supported by the design and supervision consultants. The PIO was responsible for preparing annual work programs and budgets, engage consultants and other staff, procure equipment, supervise project implementation, manage project accounts and report to IDA. The PIO was responsible for ensuring that the project components were selected consistent with the agreed selection criteria. The Project Director (PD), who was the head of the PIO, was assisted by 8 Executive Engineers based in each district and 65 Thana Engineers. The PD was also assisted by the headquarters staff assigned to the PIO. A District Road Development Committee (DRDC) was established in each district and was responsible for final selection of road segments and for co-ordination of improvement, upgrading and maintenance works. At the initial stage, quality control work was mostly done by consultants; however, as LGED staff became trained, this responsibility was gradually taken over by the LGED staff and was satisfactorily performed with assistance and advise from the Consultants. Some of the markets selected did not have sufficient land to accommodate the planned developments and as a result new markets had to be taken up for improvement. The performance of the contractors and consultants, closely monitored by the LGED, was found to be generally satisfactory. The availability of GOB counterpart funding was satisfactory and the implementing agencies showed adequate commitment in compliance of the major credit covenants. The implementing agency complied with IDA guideline on procurement and disbursement though there were some delays in submission of audit reports. In general, the borrower's performance can be rated as highly satisfactory, because the works completed were of satisfactory quality and despite initial delays, the project succeeded to complete all physical targets within the approved costs.

G. ASSESSMENT OF OUTCOME

39. The project has achieved most of its major objectives. It has fully met all its physical targets within the original cost estimates, substantially met its institutional objectives (in achieving a sustainable maintenance system with assured and adequate maintenance budget and an acceptable maintenance strategy; in ensuring good quality standards in roads design, implementation and supervision, which is getting replicated on a national scale; in incorporating a Socio-Economic Monitoring and Evaluation system as a part of the project and of the implementing agency (LGED) organisation; in strengthening LGED as an efficient agency for project design and management; and in considerably strengthening local contractor capacity which is now able to take up larger contracts under the follow-up project).

40. The project has also achieved fully its socio-economic objectives in increasing rural mobility, reducing rural transport costs, in improving markets and reducing marketing costs; and in creating rural employment for the poor. Besides significantly reducing the transportation costs on improved and upgraded roads, the project also contributed in reducing travel time and providing good riding quality, both for motorised and non-motorised traffic. The construction of structures on rural roads showed a remarkable achievement in improving accessibility because the rural roads were constructed in the past under the food for work program but the culverts were not constructed and gaps were left in between. The sub-component of SRR greatly helped to fill these gaps and improved accessibility. Motorised and non-motorised traffic increased significantly on improved roads, which brought a great relief for the poor rickshaw puller in terms of both financial income as well reduced physical fatigue. Due to improvement of GCMs, spoilage in marketing of perishable goods decreased, and it helped to increase the income of the market users. High quality of improved roads helped in reducing their maintenance costs. Tree plantation

on both sides of the improved roads and surfacing of the unpaved roads, reduced dust and improved the environment of the project area, while also giving regular employment to poor women (who are employed to take care of these trees, one person per km). Given the full or substantial achievements of all the physical targets both in terms of quantity and quality, and the institutional and economic objectives of the project, the overall assessment of the project outcome can be rated as very satisfactory.

41. Economic Re-evaluation: The economic re-evaluation, after the project was complete, indicated that the project outcome is highly satisfactory because the average economic internal rate of return (EIRR) for 40 of the 47 completed roads studied under the feeder road component is estimated at 26% (Table 9A), compared with its average 25% estimated at appraisal, and the average EIRR for the completed GCMs component is estimated at 31% (Table 9-B), compared with its (10%) estimated at appraisal. Assuming similar returns from road improvements under SRR (structures on rural roads) and the roads under flood rehabilitation component, the cost coverage related to feeder road component is providing the above level of economic return is about 72%, and that related to GCM about 5%. The economic re-evaluation is based on findings of the SEM&E study which was carried out under the project and completed in May 1997. The key objective of this study was to monitor and evaluate socio-economic effects of the rural infrastructure which were developed under the project in the eight districts. The SEM&E study evaluated the effects of 40 selected rural roads and 10 GCMs (a total of 47 FRBs and 65 GCMs were developed) through estimating EIRR by comparing pre-development and post-development status of the rural roads and markets along with a series of other specific indicators. In addition to the EIRR estimates which are based on quantifiable partial benefits, the SEM&E study concluded that the development of rural roads and markets has generated several positive impacts, which can be easily reflected in the following general pattern: (a) development of rural roads generated substantial increase in the total movement of goods and persons. On improved roads the volume of both passenger and goods traffic increased significantly (with about 70 % increase in ton-km of freight carried and 170% in passenger-km, one year after road improvement); (b) on improved roads, unit transport charges for goods and passengers decreased substantially (about 60% reduction in motor vehicle charges on a sample of improved roads, and about 30% reduction in non-motorised vehicle charges); (c) stimulated the operation of bus service for the first time on many improved roads that brings in many social benefits, including better access to health facilities, schools, and extension services; (d) generated significant new employment opportunities for the poor (created an estimated 18,600 for the construction and improvement works, as against 12,000 estimated at appraisal), and about 500 regular positions in future maintenance; indirect employment effects have been estimated at about 5,000 full-time jobs in markets, new road-side shops, and transport services); (e) losses due to spoilage or quality deterioration for perishable items such as fish, meat, eggs, milk, vegetables, etc. decreased significantly; (f) the lease value (bid price for running markets) and toll revenue (from traders) in the markets went up significantly; (g) new shops and commercial activities started up around the markets; (h) cost of the land near the market increased significantly; and (i) the markets became more efficient, more hygienic - for example with better drainage and toilet facilities and hygienic slaughter houses in lieu of open places for slaughter of animals for meat; busier, and more active commercial centres facilitating rural economic growth in both farm and non-farm sectors.

42. The SEME studies under the project have resulted in good models for impact studies involving predominantly non-motorised transport; these reports currently provide good guidance for future impact studies in Bangladesh. A separate exercise is currently under way (under the follow-up project) to review the massive socio-economic surveys conducted under RRMIMP, and to prepare a concise report on "rural infrastructure impact," after screening the many case studies under the project; the resulting report would be published for international use.

H. FUTURE OPERATIONS

43. Since most of the civil works covered under RRMIMP included improvement of FRBs, construction of drainage structures on feeder roads and rural roads, construction of GCMs and periodic maintenance on existing feeder and rural roads, no formal plan of operation was established. However to ensure routine and periodic maintenance of the improved roads is appropriately undertaken, LGED is currently implementing IDA financed RRMIMP-2, which includes, inter-alia, a substantial component on road maintenance and capacity building. The component of road maintenance under RRMIMP-2 attaches great importance to building an adequate maintenance management system in the country based on best practice and techniques. LGED maintenance budget has increased progressively from Taka 300 million (US\$7.5 million) in 1992/93 to Taka 900 million (US\$22.5 million) in 1997/98. A Rural Infrastructure Maintenance Cell (RIMC) was established within LGED in 1992, and since then it has made considerable progress in establishing the framework for road maintenance by setting up a road inventory database, introducing national maintenance guidelines, and establishing a training program.

44. The other main source for funding maintenance of rural roads is the CIDA/CARE road maintenance program, which is designed as a poverty-alleviation program for destitute women. To complement and support its efforts for setting up an effective, planned periodic maintenance system, RRMIMP-2 would finance: (a) technical assistance for setting up and designing an effective and efficient management system in the selected area; (b) provide 50% of the periodic maintenance costs in the project area on a declining percentage basis over the implementation period, starting at 80% in the first three years and decreasing to 30% in the last two years. This assistance would be provided in co-ordination with RIMC's program and other ADB financed inputs for maintenance strengthening. The resource base for UPs has also been expanded by giving them 1% of the land transfer fee which will increase their financial capability to improve and maintain rural infrastructure. 50% lease value of markets is now going to UPs instead of previous 40%. Leasing threshold for UP managed markets has been increased from Tk 50,000 to Tk 100,000. Given that LGED has made all necessary arrangements including technical planning and budgetary provisions to carry out the maintenance of roads, structures and GCMs, and IDA has a follow-on project RRMIMP-2, there is no need for a specific future plan of operation for RRMIMP.

I. KEY LESSONS LEARNT

45. The key lessons learned from the project are as follows:

- To facilitate effective project implementation, it is advisable to start bidding process for civil works before project start, and appoint design and supervision consultants before Credit approval so as to avoid delays;
- For the success of rural infrastructure development projects, it is important to ensure active local community participation at all project stages including priority setting, site selection, planning, design, implementation, quality control and measuring the impact of completed project;
- To enhance all-weather accessibility of rural roads, it is necessary to place greater emphasis on the construction of drainage structures on rural roads;
- To improve transport and trading system in rural areas where seasonally navigable waterways prevail, it is important to develop river jetties to ensure adequate integration of inland water transport and road transport;

- To develop small scale contractors, the continued training and equipment support plays an important role, and at the same time gradual increase in contract size is necessary to promote contractors' output and efficiency;
- An early action on the preparation of land acquisition action plan, simplified compensation procedures, and timely compensation payment to land owners, can substantially reduce the project completion time;
- An effective mid-term review can make the project flexible with all physical targets achieved in phases along with gradual capacity building of the borrowing agency;
- Restructuring growth center market management and its leasing systems with greater user participation, can prove helpful to improve efficiency and increase revenue for UP-managed markets; and
- To ensure sustainability of rural infrastructure maintenance, it is critical to strengthen the financial status of local bodies (UPs) and to make them accountable for maintenance success.

PART-II**Statistical Information**

- Table 1 : Summary of Assessments
Table 2 : Related Bank Loans/Credits
Table 3 : Project Timetable
Table 4 : Loan/Credit Disbursements : Cumulative Estimated and Actual
Table 5 : Key Indicators for Project Implementation
Table 6 : Key Indicators for Project Operation
Table 7 : Studies Included in Project
Table 8A : Project Costs
Table 8B : Project Financing
Table 9A : Economic Costs and Benefits
Table 9B : Economic Costs and Benefits Markets
Table 10 : Status of Legal Covenants
Table 11 : Compliance with Operational Manual Statements
Table 12 : Bank Resources : Staff Inputs
Table 13 : Bank Resources : Missions

Table 1: Summary of Assessments

A. Achievement of objectives	<u>Substantial</u> (✓)	<u>Partial</u> (✓)	<u>Negligible</u> (✓)	<u>Not applicable</u> (✓)
Macroeconomics policies	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sector policies	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Financial objectives	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Institutional development	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical objectives	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Poverty reduction	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gender concerns	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other social objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Environmental objectives	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public sector management	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Private sector development	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (specify)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Project sustainability	<u>Likely</u> (✓) <input checked="" type="checkbox"/>	<u>Unlikely</u> (✓) <input type="checkbox"/>	<u>Uncertain</u> (✓) <input type="checkbox"/>	
C. Bank performance	<u>Highly satisfactory</u> (✓) <input type="checkbox"/>	<u>satisfactory</u> (✓) <input checked="" type="checkbox"/>	<u>Deficient</u> (✓) <input type="checkbox"/>	
Identification	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Preparation assistance	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appraisal	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supervision	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Borrower performance	<u>Highly satisfactory</u> (✓) <input type="checkbox"/>	<u>satisfactory</u> (✓) <input checked="" type="checkbox"/>	<u>Deficient</u> (✓) <input type="checkbox"/>	
Preparation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Implementation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Covenant compliance	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Operation (if applicable)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Assessment of outcome	<u>Highly satisfactory</u> (✓) <input type="checkbox"/>	<u>Satisfactory</u> (✓) <input checked="" type="checkbox"/>	<u>Unsatisfactory</u> (✓) <input type="checkbox"/>	<u>Highly unsatisfactory</u> (✓) <input type="checkbox"/>

Table 2: Related Bank Loans/Credits

Loan / credit title	Purpose	Year of approval	Status
Preceding operations	Nil		
Following operations RRMIMP-2	Improvement of feeder roads, growth centre markets, small river jetties and their maintenance.	1997	On going.

Table 3: Project Timetable

Steps in project cycle	Date planned	Date actual
Identification		1981
Preparation		1983-87
Appraisal		Sept. 21-Oct. 15, 1987
Negotiations		May 23-27, 1988
Letter of development policy (if applicable)		
Board presentation		June 24, 1988
Signing		July 29, 1988
Effectiveness		May 05, 1989
First tranche release (if applicable)		
Second (and third) tranche release (if applicable)		
Project completion		June 30, 1997
Loan closing		June 30, 1997

**Table 4: Loan / Credit Disbursements: Cumulative Estimated and Actual
(US\$ thousands)**

	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY
	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96	96-97	97-98
Appraisal estimate	5,800	9,400	30,100	38,500	44,500	51,800	58,900	62,300	-	-
Actual*		8,638	14,420	22,251	28,353	33,946	43,562	51,598	56,120	57,900
Actual as % of estimate		91.89	47.91	57.79	63.71	65.53	73.96	82.82	90.01	92.94
Date of final disbursement	Oct. 31, 1997									

*Source of actual Disbursement: Local Government Engineering Department (LGED)

Table 5: Key Indicators for Project Implementation

(i) Key Implementation Indicators in SAR/President's Report	Estimated	Actual
01. FRB Improvement	500 Km.	496.85 Km.
02. FRB Upgrading	200 Km.	495.72 Km (i)
03. Bridges on FRBs	1223 m. (PP)	1079 m. 35 Nos.
04. Markets	65 Nos.	65 Nos.
05. SRRs	3705 m.	4041 m.
06. Maintenance	1867 Km.	400.78 Km.
07. Tree Plantation	500 Km.	398.89 Km.
08. Flood Component :		
i) Roads	399.04 Km.	428.19 Km.
ii) Bridges	1797.04 m.	2373.86 m.
iii) Drainage	21776.00 m.	17505.00 m.
iv) Retaining	3001.00 m.	2215.63 m.
09. LGED HQ Building	1 No: 6 Storied Building	Completed
10. Functional Buildings	6 Nos.	8 Nos.

(i) During appraisal it was estimated that 110 Km. would be upgraded from HBB to WBM to B.C and 90 Km. would be bituminous carpeted directly. Finally in order to protect the pavement and the environmental from dust hazard all 495.72Km bituminous surfaced.

Table 6: Key Indicators for Project Operation

Key Operating Indicators in SAR/President's Report	Estimated	Actual
Maintenance	There were no indicators established at the time of appraisal.	Routing Maintenance responsibility is taken by Rural Infrastructure Maintenance Cell (RIMC) of LGED, Periodic Maintenance would be done under RRMIMP-2. Maintenance budget has been increased 3 times in 1997-98 from that of 1992-93.

Table 7: Studies Included in Project

Study	Purpose as defined at appraisal/redefined	Status	Impact of Study
1. Socio- Economic Monitoring and Evaluation (SEME) Study	To determine Socio-Economist Change.	Completed in 1997	Project interventions have made significant short term socio-Economic benefit; investment have shown high Economic returns .
2. Rural Transport Study	Investment strategy	Completed in 1994	Useful for appropriate investment
3. Financial Planning Study for Upazila Parishad	To assess mobilisation of local resource	Completed in 1992	In line with the finding of the study, steps have been taken to augment local resource .
4. Disaster Assessment and Emergency	Priority ascertain	Completed in 1995	Found useful in taking appropriate measures in disaster management within the project area.
5. Financial Management Study and Private Audit	Improve Financial Management System and maintain proper system of Accounting	Completed in 1997	Found useful in Financial management and auditing.
6. Study of Follow-up	To prepare a new Project	Completed in 1996	A Project of similar nature has been launched.
7. Impact Study	To determine the Impact of the project to the society	Completed in 1992	Significant short/long term Impact on the society have been observed.

Table 8A: Project Costs

Sl. No.	Item	Appraisal estimate (US\$M)			Actual/latest estimate (US\$M)		
		Local costs	Foreign costs	Total	Local costs	Foreign costs	Total
01.	Land Acquisition	1.1	0.0	1.1	2.220	0.000	2.220
02.	FRB Improvement	20.7	5.2	25.9	26.41	6.61	33.05
03.	FRB Upgrading	4.6	1.2	5.8	2.69	0.67	3.36
04.	Tree Plantation	0.0	0.0	0.0	0.32	0.000	0.32
05.	FRB Maintenance	3.0	0.6	3.6	0.64	0.16	0.80
06.	Growth Centre	4.5	1.5	6.0	3.22	0.80	4.02
07.	SRR	4.3	1.1	5.4	8.85	2.21	11.06
08.	Lab & Office Building	0.0	0.0	0.0	0.56	0.14	0.70
09.	Equipment	0.5	1.4	1.9	2.80	0.70	3.50
10.	Training	0.5	0.2	0.8	0.30	0.08	0.38
11.	Other (Addl. M.P + O&M)	3.0	1.1	4.1	2.99	0.000	2.99
12.	LGED HQ Building	1.0	0.7	1.7	1.62	0.41	2.03
13.	Consultancy - Main	3.9	3.2	7.1	5.86	4.80	10.66
14.	Consultancy - Flood	0.7	0.3	1.1	0.661	0.000	0.661
15.	Consultancy - HQ	0.0	0.0	0.0	0.270	0.000	0.270
16.	Flood Rehabilitation						
	Works	12.5	3.2	15.7	12.94	3.24	16.18
	Goods	0.4	0.3	0.6	0.17	0.16	0.330
17.	Base Line :						
	Physical Contingency.	6.0	1.8	7.8	1.50	0.97	2.47
	Price Contingency	7.4	2.3	9.7	0.000	0.000	0.000
	Total Costs	74.3	23.9	98.3	74.05	20.95	95.00

Table 8B: Project Financing

Source	Appraisal estimate (US\$M)			Actual / latest estimate (US\$M)		
	Local costs	Foreign costs	Total	Local costs	Foreign costs	Total
IBRD/IDA	46.3	15.9	62.3	43.30	14.60	57.90
Cofinancing institutions (KfW) (SDC)	10.3 4.8	3.8 3.8	14.2 8.6	12.18 5.65	1.33 4.47	14.06 9.84
Other external sources						
Domestic contribution	13.2	--	13.2	13.2	--	13.2
Total	74.60	23.50	98.30	74.37	20.44	94.81

**Table 9A: Economic Costs and Benefits
(For Feeder Road Type B)**

District	Length (km)	No. of Roads	Cost (Taka in million)	EIRR (%)		
				Appraisal	Re-evaluation	
				Range	Mean	
Rajshahi	83.4	7	212.3		16-54	27
Naogaon	54.3	5	149.9		16-31	21
Natore	39.1	5	90.2		20-45	34
Nawabganj	45.1	5	106.7		13-36	24
Pabna	43.1	2	97.8		17-47	32
Sirajganj	40.1	5	127.7		14-25	18
Bogra	81.6	7	214.7		15-62	28
Joypurhat (average)	71.8	4	130.7	25	17-31	25
						26

**Table 9B: Economic Costs and Benefits
For Growth Centre Market**

Name of Market	District	Improvement Cost (Taka in million)	EIRR (%)	
			Appraisal	Re-evaluation
Charghat	Rajshahi	2.42		22
Bonpara	Natore	3.43		32
Malanchi	Natore	2.45		23
Sujanagar	Pabna	8.59		84
Jamtail	Sirajganj	2.56		23
Kahaloo	Bogra	3.87		36
Pnachbibi	Joypurhat	3.63		31
Badalgachi	Naogaon	1.93		18
Shibganj	Nawabganj	2.55		21
Borgachi	Nawabganj	1.98		17
Average			10	31

Table 10: Status of Legal Covenants

Agreement	Section	Covenant type	Present status	Original fulfilment date	Revised fulfilment date	Description of covenant	Comments
DCA	3.01 (a)	05	C			GOB committed to objectives and to providing appropriate means.	
	3.01 (b)	05	C			GOE to execute in accordance with Implementation Schedule (Schedule IV).	Done
	3.01 (c)	05	C			GOE to follow agreed criteria in selection/design subcomponents.	Done
	3.02 (a)	10	C			GOE to engage consultants with satisfactory qualifications, experience, terms of reference, (Schedule 3) for Part A in accordance with IDA guidelines.	Done
	3.02 (b)	10	C			GOE to engage consultants with qualification, experience and terms of reference satisfactory to IDA for Part B (flood repair).	Done
	4.01 (a)	01	C			GOB to keep adequate project accounts	Accounts satisfactory, computerised Accounting System has been prepared and is now under operation.
	4.01 (b)	01	C	03/31/91		GOB to submit audited accounts 9 months after end of fiscal year	GOB submitted audit report which was prepared in old format. Accredited private auditors have since been appointed for accounts from 1994-95. They have submitted report for 1994-95, 1995-96. 1996-97 audit report is under preparation.
	4.01	01	C			GOB to maintain records for SOEs, retain copies until 1 year after last withdrawal, ensure SOEs covered in annual audit.	
	6.01	05	C	10/27/1988	05/05/89	Effectiveness Conditions	
	1.3 (b)	10	C			GOB to adopt: (a) system for feeder road maintenance; (b) plan for financing feeder road maintenance; (c) system for monitoring local government road and market activities; (d) design and construction of standards for feeder and rural roads; and (e) plan of action for rest of project, satisfactory to IDA. (All conditions for disbursement over SDR 8 m on Category 1 (a) (rural infrastructure civil works).	(a) Being complied with on a continuing basis; (b) Allocation for maintenance expenditure is provided in the revenue budget; (c) Staff deployed to monitor activities; (d) Done and (e) Done.
	1.3 (c)	10	C	06/30/90	01/31/93	GOB to carry out study and financial plan for LGEDHQ's (disbursement condition for the LGED HQ Component, Part A9).	Financial Plan produced; IDA/ADB/KfW/GOB have agreed to finance the building amounting to US\$2.2 million.

	Sch. III	10	C			Procurement: ICB goods limit = \$200,000; prudent shopping \$25,000/500,000; minimum flood works packages Tk 1m for LGED and RHD resp.; IDA review of works contracts greater than \$200,000 and first contract of each type; GOB to provide 2 copies confirmed contracts (ex. SOEs); 15% variation.	
	Sch. IV.1	10	C	03/31/92	05/28/92	GOB to carry out project in accordance with Implementation Schedule to be agreed with IDA annually by March 31.	Complied with
	Sch. IV.2	04	C			GOB to ensure upazilas contribute 7% costs of rural improvement.	
	Sch. IV.3	02	C			GOB to ensure zillas: (a) recover costs of EQ in rentals; (b) maintain separate accounts for EQ rental/expenses.	
	Sch. IV.4	02	C			GOB to ensure upazilas increase market tolls on improved markets in accordance with schedule to be agreed with IDA.	District Administration has raised toll rates in all districts starting from April 15, 1996 (Bengali New Year).
	Sch. IV.5(a)	09	C	03/31/91	03/31/92	GOB to furnish IDA with assessment of project performance to date and draft action plan for remainder of project.	GOB submitted assessment in April and Nov. 1994. Second major project review done in May 1994.
	Sch. IV.5(b)	10	C	06/30/91	05/31/92	GOB to review action plan with donors.	GOB submitted assessment in April and Nov. 1994. Second major project review done in May 1994.
	Sch. IV.6	10	C			GOB to issue no tender documents for civil works until consultants are engaged and have reviewed tender documents.	Complied with

Covenant Types:

1	=	Accounts/audits	7	=	Involuntary resettlement
2	=	Financial performance/revenue generation from beneficiaries	8	=	Indigenous people
			9	=	Monitoring, review and reporting
3	=	Flow and utilisation of project funds	10	=	Project implementation not covered by categories 1-9
4	=	Counterpart fund	11	=	Sectoral; cross-sectoral budgetary or other resource allocation
5	=	Management aspects of the project or	12	=	Sectoral or cross-sectoral policy/regulatory/institutional action.
6	=	Environmental covenants	13	=	Other

Present Status:

C	-	Complied with
CD	-	Complied after delay
NC	-	Not Complied with
Soon	-	Compliance expected in reasonable short time
CP	-	Complied with Partially
NYD	-	Not yet due.

Table 11: Compliance with Operational Manual Statements

No significance lack of compliance with any applicable Bank Operational Manual/ Statement (OD or OP/BP) was noticed.

Table 12: Bank Resources : Staff Inputs

Stage of project cycle	Planned		Revised		Actual	
	Weeks	US\$	Weeks	US\$	Weeks	US\$
Through appraisal					68.3	100.1
Appraisal - Board					64.4	105.0
Board - effectiveness]						
Supervision]					273.3	438.1
Completion					1.3	1.0
Total					407.3	644.2

Table 13 : Bank Resources : Missions

Stage of project cycle	Month / year	Number of persons	Days in field	Specialised staff skills represented	Performance rating		Types of problems
					Implementation status	Development impact	
Through appraisal	1981 to 1987				—	—	—
Appraisal through Board approval	Sept.'87	3	25	TE, FS, TE	—	—	—
Board approval through effectiveness	Feb.'88	1	14	TE	—	—	—
	Oct.'88	2	21	TE, TS			
Supervision	Oct.'89	2	13	TE, HE	3	1	M
	Apr.'90	3	6	TE, HE, DO	3	1	M
	Sept.'91	2	8	TE, TS	2	1	M
	Feb.'92	3	5	TE, HE, TE	2	1	M
	May'92	5	19	TE, TS, TS, DO, HE	1	1	M
	Nov'92	4	13	TS, TE, HE, TS	1	1	C
	June'93	2	10	TS, HE	2	1	C
	Nov.'93	4	14	TS, TE, HE, AR	2	2	C
	Feb.'94	3	19	TS, TS, TE	2	2	C
	May'94	4	17	TS, TE, TS, HE	S	S	C
	Nov.'94	3	9	TS, TE, HE	S	S	C,M
	Feb.'95 (partial mission)	2	12	OS, TE	-	-	-
	May'95 (partial mission)	4	8	TS, HE, HE, TE	-	-	-
	Nov.'95	4	14	TS, TE, HE, TE	S	S	C,M
	May'96	2	6	TE, HE	S	S	C,M
Completion	June '97	4	8	TE, HE, HE, US	S	S	-

Notes:

Ratings: Minor Problem: 1; Moderate Problem: 2; Major Problem: 3

Highly Satisfactory: HS; Satisfactory: S; Unsatisfactory: U; Highly Unsatisfactory: HU

Specialization: Transport Economist: TE; Highway Engineer: HE; Transport Specialist: TS; Disbursement Specialist: DO

Operations Specialist: OS; Urban Specialist: US; Architect: AR; Financial Specialist: FS

Problems: Financial Problem: F; Management Problem: M; Covenant Problem: C

**ANNEX A
BORROWER'S CONTRIBUTION
TO THE ICR**

THE PEOPLE'S REPUBLIC OF BANGLADESH

**RURAL ROADS AND MARKETS IMPROVEMENT
AND MAINTENANCE PROJECT**

CREDIT NO 1940 - BD

**BORROWER'S CONTRIBUTION TO
IMPLEMENTATION COMPLETION REPORT (ICR)**

**LOCAL GOVERNMENT ENGINEERING DEPARTMENT
MINISTRY OF LOCAL GOVERNMENT RURAL DEVELOPMENT
AND CO-OPERATIVES
LOCAL GOVERNMENT DIVISION**

INTRODUCTION:

1. The economy of Bangladesh is overwhelmingly rural and dependent on Agriculture. More than 80% of its 120 million people live in the rural areas most of which are directly or indirectly connected with activities linked with agriculture. Achievement of higher agriculture growth through cheap agriculture input and improved and hygienic marketing facilities is one of the main policy of the Government of Bangladesh. Keeping this in view the Planning commission of Bangladesh initially selected over 1400 markets out of more than 6000 rural markets as Growth Centres. These numbers were increased to over 2100 at a later stage. These Growth Centres are to act as centre of rural development which will have better trading facilities like covered multipurpose shed, fish shed, meat shed, open space pavement, paved, internal roads, drains, toilets to provide improved hygienic atmosphere for trading and office building for market management. Introduction at low cost year round access to these Growth Centres is one of the important component of the strategy for Rural Development (SRD) of the Government of Bangladesh.

2. With this view the Rural Roads and Markets improvement and Maintenance Project (RRMIMP) was designed with finance from the World Bank, KfW, SDC and GOB. Separated agreement were signed each of the donors. Credit 1940 - BD with IDA was signed on 29 July 1988.

3. The parameters which this report includes are:

- (i) An assessment of the project objectives, design implementation and operation experience
- (ii) an evaluation at the borrowers own performance during the evolution and implementation of the project
- (iii) an evaluation of the Bank and the Co-financiers

ASSESSMENT OF THE PROJECT OBJECTIVES, DESIGN, IMPLEMENTATION AND OPERATION EXPERIENCE

ASSESSMENT OF THE OBJECTIVE:

The objective of the project as stated in the Staff Appraisal Report (SAR) were:

- (a) to promote rural development through the reconstruction, upgrading and maintenance of feeder roads, growth centre markets and the construction of structures on rural roads in the project area;
- (b) to implement cost effective approaches to designs, construction and maintenance of these components within resource constraints
- (c) to improve resource mobilisation to support Zila and Upazila maintenance activities
- (d) to strengthen the institution concerned with the development and maintenance to feeder and rural roads and markets and

- (e) to rehabilitate roads and associated structures damaged by the 1987 floods while improving standards to minimise flood damage

To achieve these objectives the Project comprised of the following Component:

- (a) improving, maintaining, and upgrading 500 km of Type B feeder roads including bridges and drainage structures;
- (b) constructing bridges and culverts on about 650 km of rural roads;
- (c) master planning and improving infrastructures in 65 growth centre markets;
- (d) providing project support in the form of consultants, project staff, vehicles and equipment, and office and laboratory facilities in the project area; and
- (e) constructing a new headquarters building for the LGED.

Evaluation of Objectives

The project was in line with "Strategy for Rural Development" (SRD) published by the Planning Commission of Bangladesh in January 1984. The Strategy for Rural Development (SRD) was designed to achieve higher agriculture growth rate through cheaper agriculture inputs and ease in marketing agriculture outputs through a series of project each of which was to cover at least one or more of the three following main elements:

- (a) Rural Infrastructure
- (b) Minor Irrigation drainage and flood control
- (c) Production and employment component with emphasis on improving opportunities for the rural poor and women.

Physical components of the project like improvement of 500 km of FRBs which connects Growth Centres, improvement of 65 Growth Centres one in each of the project Thanas and construction of more than 4000 m structures on Rural Roads were all aimed at improving the Rural Infrastructure.

Use of local labour force in the construction of the said physical components and use of destitute women in maintenance of roads and trees addressed the third component of SRD.

4. The objective of resource mobilisation to support Zila and Upazila maintenance activities was included to achieve sustainable infrastructure development. The project was to identify existing and potential resources at District and Thana level which could be utilised for maintenance of the developed infrastructure. A study was carried out under the project on "Upazila Financial Planning" for that purpose. But with the change of Government the emphasis was shifted to Union level from Upazila level and no effective use could be made of the study. With the change of Government in 1996 emphasis is again being given on the Thanas as focal point of development. Thus the study could be utilised in RRMIMP-2 to help find ways of resource mobilisation to support maintenance activities at local level.

5. Participatory process was not well documented during appraisal however it was carried out during implementation to the extent possible.

Cost effective approaches to design, construction and maintenance

6. The objective of cost effective approaches to design, construction and maintenance of the various components of the project have also been significantly achieved. Semi-dense bituminous concrete mix designs were carried out for surfacing of the roads eliminating the immediate need for seal coating. Bridges with bank seat and return type wing walls were designed reducing the cost by about 10%. However the smaller bench seat bridges with brick mattressing in the approaches, were, subsequently not considered cost effective by some professionals as they would need costly maintenance.

The project initiated developing a cost effective maintenance system. A report on maintenance management was produced. A tender document with specification of maintenance works and a library of standard items for maintenance works was produced for use in getting maintenance works done through contractors.

Lengthman system was used in routine maintenance of road shoulder, slopes and drainage structures.

However labour contracting societies could not be developed under this project. Well trained LCSs would be very useful for routine and smaller periodic maintenance of rural infrastructure. This issue should be more seriously addressed in RRMIMP-2.

Resource Mobilisation at Zila and Upazila level

7. The Government of Bangladesh has formed a Local Government Commission to suggest structure, power and responsibilities of different types of Local Government. The commissions recommendations are now with the Government awaiting final decisions. As such implementation of the recommendations of the Upazila Finance Planning Study conducted under RRMIMP has been delayed. However the potential sources of resource mobilisation identified by the study got active consideration during preparation of RRMIMP-2 which has since been implemented to increase the income of Union Parishads. This will increase the capability of the Union Parishads to finance development programmes and maintain them.

EVALUATION OF BORROWERS OWN PERFORMANCE

PHASE - 1 ACHIEVEMENT:

The credit agreement with IDA was signed on 29 July 1988. As a condition of the credit effectiveness, an agreement was signed on 25 April, 1988 with a consortium of consultants lead by TPO Sullivan and Partners Limited engaging them as Design and Supervision Consultants (D&SC) of the Project. Due to delay in engagement of Consultant of the start up of the project was delayed.

Prequalification of contractors with the help of the D&SC was carried out. Tender documents were prepared for construction of physical components of the project, procurement of construction and laboratory equipment. After completion of all these steps tenders were floated in March/April 1989 for construction of Markets and Structures on Rural Roads.

Tenders for Improvement of FRBs and construction of Bridges were invited in April/May of 1989. As a result almost a year was lost for these components. However with the arrival of construction & laboratory equipment and increased Technical assistance construction activities paced up.

By the Mid-Term Review of the Project in May 1992 only 75 km of FRBs were improved and another 75 km were underway. Due to the slow performance and due to anticipated shortage of fund (which was later on proved wrong as was earlier claimed by the borrowers) the donors reduced the physical targets of the project as follows:

- (a) Improvement of 350 km of FRB in place of 500 km.
- (b) Upgrading of 200 km of FRB dropped
- (c) Construction SRR reduced to 2583 m from 3705 m.

PHASE - 2 PERFORMANCE

In doing so the donors underestimated the borrowers capability and during November 1992 and June 1993 Missions donors reviewed and reset the physical targets to be achieved in the Phase -2 of the project as follows:

- (i) Improvement of FRBs approximately 500 km with 35 Bridges and other drainage structures
- (ii) Surfacing/upgrading of FRBs approximately 500 km
- (iii) Construction of over 4000 m of SRRs.

The project successfully achieved all those targets even with considerable savings.

ROAD MAINTENANCE

The borrower with the help of the Consultants produced report on Road Maintenance Management and Tender document for carrying out road maintenance through contractors. Routine Maintenance of roads were carried out through lengthman system. After completion of the project routine maintenance of its components have been taken over by Rural Infrastructure Maintenance Cell (RIMC) of LGED. Periodic maintenance haven taken over by RRMIMP-2. About 57.22 km of Roads improved under RDP-7 are being maintained at a cost of Tk 19.99 Million by RRMIMP-2 under 1996-97 programme.

UPAZILA FINANCING PLANNING STUDY

As required by the project a study on Upazila Financing Planning was carried out to identify potential resource mobilisation sources for maintenance of rural infrastructure. However with the change of Governments the implementation of the recommendations of the study has been delayed. The study was useful in addressing the issue of resource mobilisation in RRMIMP-2.

KEY LESSONS LEARNT

- (i) A participatory process in selection of project components will avoid problems during implementation and will increase users acceptability
- (ii) Land Acquisition problems should be resolved through co-ordination between various Ministries and Agencies

- (iii) The quantum of acquisition of land in this type of Rural Development project being very small special care is necessary in preparation of Land Acquisition Plan to avoid future complication
- (iv) Time required for completing Land Acquisition process is always found to be much more than the planned time. As such this process should start at least two seasons ahead
- (v) The responsibility of valuation Land and other properties acquired should be given to the requiring body (LGED)
- (vi) Surveys of roads or markets are generally carried out about 2 years ahead of actual execution causing difference in the designed quantity and actual requirement during execution specially for earth works and drainage structures. As such provision of Physical Contingencies & price contingencies should be kept in the contract to avoid price over run
- (vii) Action should be taken at the earlier stage for failing contractors
- (viii) Persons trained under the project should be in the project for some considerable time so that the project can gain from the experience gained in training
- (ix) Traffic increases with the completion of improvement of the road far exceeds the predicated rate of increase. Diverted and generated heavy traffic beyond prediction reduces the life of the road. Stricter law regulating heavy traffic should be enacted and enforced.
- (x) Hard shoulders is essential for prolonging the life of the road.
- (xi) Regular Maintenance of rural infrastructure is essential.

EVALUATION OF THE PERFORMANCE OF THE BANK AND THE CO-FINANCIERS

Donors' performance from identification to completion of the project was satisfactory. Though there were some initial problems about selection of some roads, the donor - borrower relationship was good.

Supervision Missions were very professional, objectively oriented and based on understanding of the Borrower's institutional capabilities and on the basis of donors' policies and procedures. During the project implementation, the donor - borrower relationship was beneficial and productive. Both parties responded positively to the practical needs that arose during implementation. Implementation problems were correctly identified, adequately assessed. Necessary advice was given to the implementing agencies and follow up actions were adequate. The timing of Supervision Missions was appropriate and time spent in the field was sufficient.

ANNEX B

ECONOMIC RE-EVALUATION

Economic Costs and Benefits

Effects of FRB Development

Quantification of the effects of FRB development showed that on the average transport charges as measured by freight charges declined to Tk 8.29 per ton/kilometre after development compared to Tk 27.42 before development and passenger trips declined to Tk 0.60 per kilometre after development compared to Tk 1.24 before development.

Overall effect of each FRB development was measured by its EIRR. The methodology for estimating EIRR of individual FRB development was based on a partial analysis of the users transport cost savings from FRB improvement and ignored other economic and social benefits from increased assess and mobility.

The distribution of EIRRs of the 40 FRBs studied under the SEME project are given in the enclosed table-1. The EIRRs of the developed FRBs range from 12.9 to 62.0 percent with average around 26.4 percent. SAR of June 1988 estimated EIRR of FRB development at 25% on the average, on the assumption of 5% growth of transport. On the same assumption SEME study estimated the average EIRR at 26.4% (SEME Final Report, May 1997 page 54) for 40 FRBs studied by the SEME out of the 47 FRBs targeted for development. None of the estimated EIRRs was less than 12% - the minimum level of tolerance prescribed for FRB development under RDP-7.

There was, however, considerable variations in the average EIRR among the eight project districts reflecting variations in economic and business opportunities at the project hinterlands in the districts.

SAR EIRR estimate was stipulated on benefits arising not only from growth of transport but also on externalities such as growth of agricultural productions, health benefit etc. SEME EIRR on the other hand, is based on partial analysis of reduction in financial transport charges and does not take into account other externalities. Had the excluded externalities been taken into account, the average SEME EIRR for FRB development would have been higher than 26.4%.

In addition to higher EIRR compared to SAR estimate, the SEME study also identified the following specific benefits from FRB development.

- FRB road improvements generated substantial increase in the total movement of people and goods. On improved FRBs the volume of both passenger and cargo transport increased; by over 113 percent on the average in case of cargo and 136-percent in case of passenger Traffic within a year of development.
- Resulted in transfer to more efficient modes, with substantial growth in vehicular traffic - both motorised (215%) and non-motorised (110%) and reduction in pedestrian (13%) and bullock cart trips (55%).
- Increased the number of both motorised and non-motorised vehicles for all the 40 FRBs; motorised traffic as measured by the AADT (Annual Average Daily Traffic Count) grew by 117 percent, while non-motorised traffic grew by 58%.

- The relative share of traffic volume carried by motorised traffic increased. For the 40 study FRBs share of motorised traffic in cargo increased from 40% to 70% and passenger share increased from 17% to 36% after development.
- Stimulated the operation of bus services for the first time in most of the FRBs which is likely to bring many social benefits.
- Reduced the operating costs and transport charges of rickshaws and rickshaw vans because of the availability of smoother running surface provided by the developed FRBs compared to undeveloped dirt roads (table-1).

Effects of Market Development

Overall effect of market development was measured by EIR. EIRR of market development, like EIRR of FRB development, was based on a partial analysis of spoilage reduction due to market development and ignoring several other economic benefits such as increased market turnover, increase in volume of toll collection and increase in rentals from permanent shops etc.

The EIRR of market development ranges from 17.9% (for Borgachi located in Bholarhat thana of Nawabgonj to 83.6% for Sujanagar located in Sujanagar thana of Pabna district) with average of 30.7%.

The effects of market development were monitored and quantified by SEME study and showed the following specific benefits :

- The number of temporary sellers increased by 26% and market turnover by 80%.
- The number of permanent shops increased by 53% .
- Toll collection increased by 115% and market auction proceeds by 38%
- Spoilage of perishable goods marketed reduced by 21% on the average..

The EIRR of the individual markets and other market related indicators such as toll collection, auction proceed, daily overall turnover number of permanent shops etc. showing the levels at before market development compared to the levels after development are provided in table-2.

Employment Effects of FRB and Market Development

An additional key effects of FRB and market development was direct employment generation due to construction and indirect employment generation through creation of new activities such as appearance of road side shops, of increase in non-motorised vehicles (Rickshaw, rickshaw-van) and motorised vehicles (auto-rickshaws, pickup vans, trucks etc.) and diversion of traffic etc. Total number of worker years generated as direct employment effects estimated around 19600 and total number of worker years generated as indirect employment effects estimated around 5000 from both FRB and market development. Generation of direct and indirect employment opportunities seemed to have helped alleviation of poverty and raising overall welfare of the poor in the project catchment areas.

Table-1

INDICATORS OF FRB DEVELOPMENT

Sl. No.	Name of FRBs District	Length km	Costs		EIRR #	Sport Performance				Share of Motorised Transport				Pedestrians using Road		
			Fin. Million Tk	Eco. Million Tk		Passenger		Goods		Passenger (%)		Goods (%)				
						Before	After	Before	After	Before	After	Before	After			

District: Rajshahi

1	DUR-BEL	8.79	25.50	22.96	23.37	4029	8590	129	669	2	15	8	73	1846	2356
2	GOD-KAK	14.00	38.14	34.32	12.95	4838	43084	795	1615	14	7	40	59	946	1615
3	KHA-DHU	5.08	32.89	11.07	16.06	4666	5556	137	356	2	6	48	57	3049	1303
4	BAG-NAR	1.97	3.85	3.49	54.48	1977	3725	45	180	6	12	50	44	1469	1509
5	DAR-CHO	32.27	84.63	76.26	29.79	7774	27481	1735	3020	12	58	58	78	1362	2689
6	PUT-ARA	10.67	25.70	23.12	29.88	7131	34420	394	826	7	8	31	16	3284	9498
7	NAO-RAM	10.57	22.35	20.13	21.40	8028	6197	113	910	9	16	2	80	2572	1677

36

District : Naogaon

1	JAL-PAJ	14.13	37.44	33.62	16.35	3074	16262	138	383	2	77	01	69	1453	1863
2	PRO-DEL	6.46	14.29	12.87	30.54	5891	9251	193	803	6	12	13	46	1144	1349
3	MAD-AGR	10.89	23.75	23.37	22.80	10524	20669	278	994	3	35	02	23	2851	3064
4	RAN-ABA	13.09	41.84	37.64	20.54	8667	34124	1508	1773	12	38	47	56	8161	8328
5	GAB-CHH	9.70	21.68	19.52	18.00	3711	4485	5	446	23	27	2	84	1027	1035

District : Natore

1	BAG-DAY	6.95	14.29	12.87	45.19	3653	14833	233	985	41	54	20	69	669	2576
2	HAY-LAX	2.19	3.69	3.32	20.06	3389	2480	335	200	13	24	56	64	1511	1025
3	LAL-ABD	11.19	26.57	23.90	30.52	11617	15997	1958	2085	47	76	83	95	2592	2385
4	RHD-BAM	9.18	27.82	25.05	35.16	18845	17472	174	1281	39	45	18	78	2711	2085
5	GUR-KAN	9.56	17.66	15.99	53.36	2697	8703	1171	1275	9	21	7	81	1113	1915

District : Nawabganj

1	NAW-NAM	3.36	7.11	6.40	14.89	3386	5579	98	264	3	11	47	75	1547	1910
2	MOH-RAM	2.15	5.93	5.04	12.86	19996	2328	143	195	7	2	24	52	1183	1170
3	BHO-ARG	30.53	67.76	66.11	18.73	9027	23328	340	1637	2	62	29	91	935	1787
4	HAR-CHA	2.69	6.60	5.95	32.86	3442	5378	195	264	6	11	8	68	1611	1824
5	SHI-MON	6.34	19.45	17.51	36.16	7706	10795	369	558	4	8	34	30	1883	2188

Sl. No.	Name of FRBs District	Length km	Costs		EIRR #	Sport Performance				Share of Motorised Transport				Pedestrians using Road	
			Fin. Million Tk	Eco. Million Tk		Passenger		Goods		Passenger (%)		Goods (%)			
						Before	After	Before	After	Before	After	Before	After	Before	After

District : Pabna

1	GOY-EKD	7.17	17.09	15.38	46.64	12045	15394	673	983	6	5	32	32	2298	2125
2	SUJ-TRI	35.92	80.71	72.65	16.53	8199	56063	822	2989	48	44	42	79	1234	9672

District : Sirajganj

1	DRA-ENA	9.31	35.11	31.57	16.80	1939	15907	526	526	3	14	1	21	2312	2604
2	JAM-BAL	7.70	28.20	25.38	14.07	1223	8618	137	396	4	43	2	26	1295	1947
3	TAR-BAR	10.53	30.71	27.63	22.58	3342	12043	1	372	8	40	1	70	2081	1685
4	TAL-MOH	8.33	23.48	21.44	13.78	6185	8191	52	406	.10	13	0	72	2374	2087
5	BAN-RAT	4.70	9.87	8.90	24.82	6029	5516	116	262	5	17	31	76	2135	2267

District : Bogra

1	RHD-DHA	1.12	2.66	2.38	61.97	3952	5561	80	223	5	6	41	43	3244	2906
2	KHA-DUR	11.22	12.10	29.60	19.11	4387	11392	493	710	1	61	4	86	1125	3054
3	RIN-GHO	13.66	35.00	31.49	52.60	21186	27508	840	1485	35	28	37	81	2606	2174
4	TIL-SAN	7.04	15.10	13.57	14.68	5693	6764	351	523	3	15	65	74	2025	2019
5	SON-NAR	22.46	57.36	51.62	15.51	3255	6498	2	1270	41	52	2	93	801	1238
6	CHO-CHA	11.62	26.03	23.41	17.60	8683	15717	6	793	55	64	50	78	958	1333
7	DHU-CHA	14.46	45.68	41.12	25.40	10039	20980	2011	2032	12	32	38	71	1721	3962

District : Joypurhat

1	KIS-MOS	8.88	23.13	20.79	28.14	11807	13154	240	634	5	10	.01	52	2636	2462
2	PAN-SHA	5.56	16.66	15.01	22.38	6979	9264	225	544	47	7	4	57	2003	2220
3	PAN-KAM	21.30	67.39	61.46	30.92	9785	85261	770	2630	8	53	50	65	3417	7720
4	RHD-MAD	12.30	29.68	26.61	17.61	9140	8976	239	812	22	38	61	88	1759	2303
Average all FRB		10.88	28.18	25.51	26.43	6928	16339	450	957	14	29	26	64	2024	2725

Table-2

INDICATORS OF MARKET DEVELOPMENTS

Sl. No.	Name of the Market	Name of District	Area (Acre)	Market Size	EIRR #	Invest. Cost in million Tk	Seller/Hat Day (No.)			Toll Collection/Hat day (Tk)			Auction Money/Year (Tk)			Turnover/ Hat day (Tk)			Spoilage Saving (%)			Permanent Shop (No.)		
							Before	After	Inc. In %	Before	After	Inc. In %	Before	After	Inc. In %	Before	After	Inc. In %	Before	After	Inc. In %	Before	After	Inc. In %
1	Charghat	Rajshahi	2.17	2	22.02	2,419	441	497	12.70	13181	15611	18.44	335000	487000	43.37	1276703	1595764	24.99	4,58	3.20	1.38	41	204	397.56
2	Borgara	Natore	2.07	2	32.24	3,431	849	1692	99.29	5531	6345	14.72	358000	1076000	92.83	340153	1516032	345.6	6.74	3.17	3.57	104	194	86.54
3	Malsanchi	Natore	2.04	0	22.30	2,454	692	993	43.50	2235	3872	73.24	70200	125151	78.28	241922	458762	89.63	5.80	3.47	2.33	75	103	37.33
4	Sujanagar	Pabna	2.35	1	83.63	8,598	1389	1899	36.72	3969	14850	274.15	150000	316100	110.73	473502	2033829	327.9	6.79	3.75	3.04	170	268	57.65
5	Jamilil	Sirajganj	2.52	0	23.09	2,561	810	877	8.27	899	1421	58.06	70000	106000	42.86	316288	572681	81.06	3.22	3.15	0.07	148	161	8.78
6	Kalabdo	Bogra	3.08	1	35.62	3,870	610	782	28.20	2768	5137	85.59	209000	153101	-25.79	258209	359720	39.31	7.52	4.57	2.95	135	216	60.00
7	Pnchibibi	Joypurhat	5.10	2	31.19	3,629	3107	3447	10.94	24936	70353	182.11	1825000	2251000	23.34	3595869	4687920	30.37	4.70	2.97	1.73	402	428	6.47
8	Budalgach	Narsingdi	1.08	1	18.19	1,912	1304	1497	14.80	3729	4820	29.26	132000	133000	2.27	374601	727542	94.22	4.59	3.76	0.83	21	41	95.24
9	Shibgonj	Newabganj	4.92	1	20.62	2,554	961	1293	34.55	1504	3973	297.14	100000	163000	63.00	330383	969747	193.5	7.16	4.56	2.60	58	173	198.28
10	Borgachhi	Newabganj	1.86	0	17.91	1,977	785	810	3.18	2433	2940	20.84	82050	75001	-8.59	237951	532974	106.6	7.17	4.36	2.81	48	50	4.17
Total :			2.72		30.70	3.34	10948	13787	25.93	61187	131322	114.62	3,531,250	4,883,353	38.29	7,467,38	13,454,971	80.18	58	37	21	1,202	1,838	52.91
Average :			2.7	0.0	30.7	3.3	1095	1379	29.2	6119	13132	105.4	353125	488335	42.4	746733	1345497	133.3	5.8	3.7	2.1	120	184	95.2

ANNEX C

SOCIO-ECONOMIC MONITORING AND EVALUATION STUDY

REPORTS

AND

OVERALL ECONOMIC IMPACTS OF RRMIMP-1

ANNEX C

**SOCIO-ECONOMIC MONITORING AND EVALUATION STUDY REPORTS
and
OVERALL ECONOMIC IMPACTS OF RRMIMP-1**

Introduction

1. The RRMIMP-1 was implemented in eight districts of north-western Bangladesh from July 1991 through May 1997. The basic objectives of this project were the promotion of rural development through reconstruction, upgrading and maintenance of roads and markets in the project areas, leading to the rural population's increased access to transport and fostering more efficient marketing of surplus commodities. In order to monitor and evaluate the economic impacts and socio-economic effects of the project, a Socio-Economic Monitoring and Evaluation (SEME) Unit was also established and, later in 1992, integrated into the project. The SEME unit was also assigned the tasks of economic appraisal of roads, bridges and markets in the project areas prior to their implementation. The objectives of the SEME unit included, among other aspects, the training of local government staff in SEME-type tasks and assist in the institutionalisation of SEME as part of a Management Information System (MIS). The SEME study was undertaken by Development and Design Consultants Ltd. (DDC) and their World Bank-approved SEME consultant.

The SEME methodology

2. The SEME methodology is essentially that of estimating economic internal rates of return (EIRR) by comparing pre-project ("before") and post-project implementation ("after") situations of the roads and markets developed under this project. The transport component of the RRMIMP-1 concentrated on the improvement of Feeder type-B roads (FRBs), as well as building small structures and culverts; the market component improved the selling spaces, drainage and internal accesses in rural markets which had been classified as growth centres on and off the developed road network.

3. It was assumed that the impacts of the road improvement would lead to: (a) reduced transport costs for freight and passengers which, in turn, would increase traffic and demand for transport; and (b) increase the choice, range, and efficiency of rural transport modes available to the rural population, which would lead to other positive effects, such as increased agricultural productivity, access to schools, health centres, etc. In the case of improved markets, it was assumed that benefits would lead to decrease in the spoilage of perishable commodities through improved sanitary conditions and decreased congestion in the immediate environment; the market users were expected to pay for these developments through increased tolls.

4. As such, the SEME methodology was based on a conceptual framework where the development of rural roads and markets is expected to generate a chain of positive externalities that are reflected in: (a) significant increase in the volumes of both passenger and goods traffic; (b) reduction in average unit transport charges; (c) increase in vehicular traffic, such as buses and trucks, which is assumed to lead to a more efficient modal mix; (d) sustained reduction of operating costs and transport charges for non-motorised vehicular traffic; (e) stimulation of new employment opportunities directly, as well as through indirect effects, for the rural poor in the project areas; (f) improved market facilities leading to decline in the losses from spoilage or quality deterioration; (g) possible increase in the volume and value of commodities traded as well as increase in market-users; (h) increase in the lease values (bid prices) and rental charges (tolls) from the developed markets as well as rise in the land values in surrounding areas; and (i) possible growth of new commerce in these areas.

5. In this conceptual framework, the expected benefits are compared with their concomitant costs. The costs include: (a) the actual costs of investments in rural roads improvements, upgrading, construction of structures and culverts, land acquisition and tree plantation; (b) the costs of required routine and periodic maintenance over the expected 20-year lifetime of the FRBs; and (c) design and supervision costs calculated at seven per cent of construction costs. However, taxes and duties as well as contingencies were excluded from the total cost.

6. For FRBs, the methodology is based on the assumption of increased user cost savings in a developed rural road compared to the previous undeveloped dirt road; where total costs comprised of the direct and indirect costs savings. The discounted cost and discounted benefits streams over 20 years were used to estimate the discount rate or the economic internal rate of return (EIRR). The EIRR for this component was estimated to be 26.4% on average, which was higher than appraisal estimate of 25%, and ranged between 12.9% to 62% (SEME Final Report, May 1977; page 54).

7. In order to obtain data on transport volume, average daily traffic counts were used for "before" and "after" situations. The draft Final Report on the Socio-Economic Monitoring and Evaluation Study (May 1997) prepared by DDC details the analytical framework that was developed through "considerable experimentation and modifications" for evaluating the impacts of developing FRBs. However, it must be pointed out that several effects were not quantified; these include both positive externalities (such as introduction of bus services) and negative externalities (congestion, for example). Overall, it was found that weighted averages of the estimated transport charges/costs had decreased following the development of the FRBs:

- (a) for cargo, the average cost (in Taka per ton-kilometer) declined from Tk 24.38 "before" to Tk 9.10 "after";
- (b) for passengers, the average cost (in Taka per passenger-kilometer) went down from Tk 1.67 to Tk 0.68.

8. In the case of developed markets, the analytical framework used for the savings in spoilage was found from the difference in the turnovers for undeveloped and developed markets given a composite price differential between the "before" and "after" cases. Based on actual market surveys, the spoilage saving was calculated as the difference between the spoilage ratio (of perishable items) in the "after" situation compared to "before". The detailed methodology is available on page 19-21 of the Final Report on the SEME Study (May 1997). An average spoilage saving of 2.1 per cent was found to have occurred in the ten markets surveyed, and average turnover per market day recorded an incremental growth of 133.3 per cent (Table 4.2 Final Report). The EIRR for this component was found to be 30.7 per cent on average, and ranged between 17.9 per cent and 83.6 per cent.

SEME Surveys and Monitoring

9. In order collect data for the analyses of the impacts of rural roads and markets improvements, several field surveys were designed, developed and administered. The surveys on roads-related issues covered traffic counts, traffic surveys, transport charge surveys and road condition inventory surveys. Markets-related surveys included enumeration and surveys of traders and selected commercial activities. These surveys were administered for a sample of 40 roads (out of 47 roads under RRMIMP-1) and 10 markets (out of 65 markets) "before" and "after" project-financed improvements. A special rural transport survey was conducted in four of the eight project districts to investigate the problems of rural transport in the projects areas.

10. The list of these sample roads and markets are provided in Table 3.1 of the draft Final Report, while the timetable of these surveys is given in Tables 3.2 and 3.3. The logframe for four roads-related questionnaires is available in Table 3.4 of the draft Final Report. Similarly, Table 3.5 lists the ten market-related questionnaires with their survey types, key information to be collected, and their purpose and uses.

11 In addition, the SEME also included a training component aimed at improving monitoring, field data collection and generation of reliable traffic and market data. Training activities included workshops (held at Bogra and Rajshahi in July, 1993) for the training of field staff, a course on Economic Analysis for project and LGED research staff in (April, 1995). Relevant guidelines and manuals were also developed, and two dissemination workshops organised (in July, 1992 and July, 1995). In total, 59 reports and/or publications, including 30 special reports, 22 monthly progress reports and five annual reports, were produced by SEME between 1991 and 1997.

12. More importantly, a notable achievement has been the establishment of a SEME unit at LGED, which will contribute significantly to the Department's institutional development. Its objectives include the development of a standardised SEME system for LGED projects, with functions both at its headquarters and at the local level such that SEME activities would become an integral part of the MIS at LGED.

ANNEX D

ICR MISSION'S AIDE-MEMOIRE

BANGLADESH**RURAL ROADS AND MARKETS IMPROVEMENT AND MAINTENANCE PROJECT
(CREDIT 1940-BD)****AIDE-MEMOIRE
SUPERVISION MISSION**

June 22-June 30, 1997

A. INTRODUCTION

1. This aide-memoire records the findings of a mission comprising Messrs. M. Quazi (Mission Leader), Z. Khan, J. Channe, S. Seth of the International Development Association (IDA), R. Habib of Swiss Agency for Development and Cooperation (SDC) and G. Rupprecht, O. Meyer-Ruhle of Kreditanstalt fur Wiederaufbau (consultants of KfW), who conducted the final supervision of the project between June 22 and June 30, 1997. The purpose of the mission was to review and assess completion of the project with respect to physical objectives and targets, legal covenants, institutional objectives and the final status of the project at completion. A wrap-up meeting with LGD was held on June 29, 1997, chaired by Mr. A.H.M. Abdul Hye, Secretary, Local Government Division of the Ministry of LGRD&C. The mission findings and recommendations recorded here are subject to confirmation by management of the donor agencies (IDA, SDC and KfW).
2. The mission is grateful for the assistance and cooperation extended to it by Government officials, including the Secretary, LGD and staff of LGED and their Consultants.

B. FINDINGS**Implementation Status - Civil Works**

3. The project fully achieved its objective of promoting rural development through reconstruction, upgrading and maintenance of the feeder roads, improvement of growth centre markets, construction of structures on rural roads in the project area, construction of LGED headquarters building and district office/laboratory facilities, tree planting along side roads and implementation of flood component. The mission is pleased to report that all civil works have been completed as appraised and modified during the project period, and that the quality of completed works has been very satisfactory. Table 1 presents the physical targets achieved under the project:

Table 1: Physical Targets Achieved

Item No.	Component	SAR	Achieved	Remarks
1.	FRB Improvement	500 km	496.85 km	300m remaining is in progress
2.	FRB Upgrading	200 km	495.72 km	HBB upgraded to BC
3.	Bridges on FRB	1223 m	1079 m	35 bridges completed
4.	Structures on RR	3705 m	4041 m	
5.	Growth Center Markets	65 No.	65 No.	1 GCM lost due to river erosion
6.	Tree planting	500 km	399 km	47.6 km by others
7.	Maintenance	1867 km	800 km	
8.	LGED HQ Building	6 floors	11 floors	Donors financed 6 floors only
9.	District Office/Laboratory Facilities	6 No.	8 No.	2 buildings added to replace existing offices
10.	Flood Component (LGD)			
	Roads	399 km	428 km	{
	Bridges	1797 m	2374 m	} Completed as required
	Drains	21776 m	17505 m	}
	Retaining Walls	3000 m	2216 m	}

Socio-economic Impact

4. In order to monitor and evaluate the economic impacts and socio-economic effects of RRMIMP-1, a Socio-Economic Monitoring and Evaluation (SEME) Unit was established and, later in 1992, integrated into the project. The SEME unit was also assigned the tasks of economic appraisal of roads, bridges and markets in the project areas prior to their implementation. The objectives of the SEME unit included, among other aspects, the training of local government staff in SEME-type tasks and assisting in the institutionalisation of SEME as part of a Management Information System (MIS). The SEME study was undertaken by Development and Design Consultants Ltd. (DDC) and their World Bank-approved SEME consultant. The Mission reviewed the draft Final Report produced by the SEME Consultants upon completion of their work. However, this draft Final Report (May 1997) will be finalised following revisions to incorporate some corrections, clarifications and improvements.

5. The SEME methodology is essentially that of estimating economic internal rates of return (EIRR) by comparing pre-project ("before") and post-project implementation ("after") situations of the roads and markets developed under this project. In order to collect data for the analyses of the impacts of rural roads and markets improvements, several field surveys were designed, developed and administered. The methodology for the evaluation was proposed by the Consultants and agreed by the Government and the donors (Revised Methodology Report, July 1994). Based on this methodology, the Consultants have quantified several impact indicators for both road and market improvements, with the central indicators being economic internal rates of return (EIRR) for each project component. In the calculation of FRB-related EIRRs, only the benefits from reductions in transport charges are accounted for; for the calculation of market-related EIRRs, only reductions in spoilage of marketed products are quantified as project benefits.

6. Overall, it was found that weighted averages of the estimated transport charges/costs had decreased following the development of the FRBs from dirt roads ("before") to paved roads ("after"):

(a) for cargo, the average cost (in Taka per ton-kilometre) declined from Tk 24.38 "before" to Tk 9.10 "after"; (b) for passengers, the average cost (in Taka per passenger-kilometre) went down from Tk. 1.67 to

Tk. 0.68. Based on their survey results, the SEME consultants have estimated EIRRs to be between 13 per cent and 62 per cent for 40 out of 47 FRBs, with an average EIRR of 22.7 per cent. This compares to the EIRR target of 25 per cent projected in the World Bank Staff Appraisal Report (SAR) of June 1988.

7. The surveys of 10 (out of 65) developed markets produced EIRRs between 18 per cent and 64 per cent, with an average rate of 26.4 per cent. An average spoilage saving of 2.1 per cent was found to have occurred in the ten markets surveyed, and average turnover per market day recorded an incremental growth of 133.3 per cent. In addition, average auction prices per year (for toll collection leases) recorded an increase of 42.4 per cent; the toll collection per hat (market) day more than doubled with a 105.4 per cent growth (Table 4.2 Final Report).

8. The impact of RRMIMP-1 on employment, according to the draft Final Report, was 18,600 person-years for construction and improvement works; around 1,000 permanent positions have also been created. In comparison, the Bank SAR had anticipated 12,000 person-years and 500 positions respectively. Indirect employment effects have been estimated to be around 5,000 permanent jobs in markets, roadside shops, and transport services. In addition, the SEME also included a training component aimed at improving monitoring, field data collection and generation of reliable traffic and market data; the training activities have been completed as also have been most reporting requirements. More importantly, in order to conserve and sustain for future the acquired know-how of field-level and LGED headquarters staff, the establishment of a SEME unit at LGED would be essential for the Department's institutional development.

Project Implementation Support

9. LGED as the implementing agency was responsible for carrying out the project. The Project Implementation Office (PIO), with a total staff of 272, was responsible for the overall management of the project. The PIO was headed by the Project Director and was supported by the Design Supervision and Management (DSM) consultants and Socio-Economic Monitoring and Evaluation (SEME) consultant. Due to delay in the appointment of DSM consultants, the civil works started about a year late, which resulted in the Credit to be extended by a year to complete all project components. Performance of PIO as well as DSM and SEME consultants has been generally satisfactory. Under this project eight functional buildings, furnished with materials testing laboratory, garage and workshop facilities, have been constructed in 8 project districts. Effective quality control for civil works component was achieved through training of site staff and use of field laboratories. To consolidate the activities of LGED, a new HQ building was also constructed under the project. The institutional development of LGED was only partly addressed under the project, as LGED was still evolving into a competent and experienced organization. The project inputs greatly assisted in its growth and efficiency. Its further development is being addressed through RRMIMP-2 (Cr. 2927-BD), based on the recommendations of study funded by Asian Development Bank.

Flood Rehabilitation Component

10. The flood rehabilitation component under this project was successfully completed by RHD and LGED during 1989 to 1993. RHD rehabilitated and repaired flood damaged bridges and roads (damaged during 1987-88 flood) in the southwest of Bangladesh with a cost of SDR 4.3 million. LGED rehabilitated flood damaged feeder roads and related bridges in 28 districts; and rehabilitated roads, bridges, drainage ditches and retaining walls in 42 municipalities west of Jamuna river with a total cost of SDR 8.1 million.

Financial Status

11. Category-wise project cost up to project completion and the total disbursement figure are shown in Annex-1. Based on the latest information, about SDR 2.72 million and DM 2.51 million will remain undisbursed at Credit closing. An amount of SDR 2.37 million and DM 1.12 million is committed to be paid to the contractors and will be disbursed as soon as the final quantities are certified by the supervision consultants. To date, CHF 12.87 million has been disbursed for the technical assistance and training, and CHF 0.456 million is committed to be disbursed shortly; there will be no undisbursed balance in CHF amount.

Financial Management

12. To streamline the accounting and financial management of LGED, a private financial management consultant has developed a computerized financial management system for the project. The financial data for the period of FY 91- FY 95 have been compiled and the remaining information is being entered into the system. Under the system, following output/reports have been generated:

- Summary statements of receipts and utilization of fund by category and different currencies.
- Statements of account balances at 143 project sites and Project Director's office at HQ.

The consultant has imparted training to LGED staff for data entry. The consultant has also developed a simple computerized accounting system for project districts, and the system is being installed under RRMIMP-2.

Financial Audit

13. During the first half of the project, audit reports prepared by the Auditor General's Office were not always submitted in time, moreover the quality of the reports was not fully in accordance with appropriate auditing principles, and resulted in a lot of queries. During the midterm review of the project, it was decided that in addition to GOB's regular audit, a private auditor would be appointed to conduct audit of the project accounts. The private auditor has submitted audit reports starting FY95. The audit reports showed satisfactory performance of financial and fund management as per IDA requirements. The auditor, however, found that different accounting standards were followed in different site offices. To overcome this problem, the audit accounting and financial guidelines have been prepared and 149 accounting personnel have been trained, which has resulted in a marked improvement in the accounting system.

Training

14. The Training Unit of LGED at Head Quarter is responsible for co-ordination and implementation of training programs nation-wide through its 15 Regional Training Centres. The project contributed to the national training program of LGED by funding all costs related to the training in the project area during the project period. The variety of courses designed for the participants were focused on road construction, surveying, material testing, drawing and estimating, accounts and book keeping, administrative and financial management, computer, etc. The LGED technical and financial staff of various levels participated these courses. In addition, the project carried out some project specific training courses for LGED staff and contractors. These courses included programming and planning, construction management, maintenance implementation, supervision and quality control. The project also sponsored the overseas training courses, study tours, workshops and seminars for LGED engineers and other relevant GOB officials. It implemented the local training for 7,837 trainee days at a cost of Tk 2.78 million and the overseas training for 677 trainee days at a cost of Tk 7.98 million. Moreover, LGED engineers learned practical oriented appropriate skills and techniques through field training provided by the consultants, which has had a positive effect on

the quality of works in the field. The mission observed that overseas training was conducted on ad hoc basis; this training could have been more effective through the adoption of a training strategy and a comprehensive training plan.

Maintenance of FRBs

15. The project has maintained about 800 km of FRBs during the project period (650 km routine and 150 periodic maintenance). The periodic maintenance was carried out through contractors and routine maintenance was carried out by laborers on length person basis. Although routine maintenance should have started on project roads after contractor's liability period, it was deferred to since WBM and HBB surfaced roads improved during the first year of the project were later upgraded to be bituminous paved roads to avoid rapid deterioration caused by bullock carts. One of the requirements of the project was to develop a maintenance implementation program, and a maintenance management system. For this purpose Rural Infrastructure Maintenance Cell (RIMC) has been established at LGED which has produced maintenance guideline. Under this project, road condition survey format and standard contract documents for maintenance work were developed and used. Recognizing the importance of maintenance, GOB has started allocating fund in the revenue budget for the maintenance of rural infrastructure since FY 1992-93. The budget allocation for maintenance has increased from Tk 300 million in FY 92-93 to Tk 900 million in FY 97-98. The mission strongly feels that LGED should continue routine maintenance of all maintainable roads in the project area, give further training to field staff for maintenance work., and ensure better co-ordination between the field offices and RIMC located at Head Quarter.

Project Closing Date

16. The mission reminded that the Credit closing date June 30, 1997 will remain unchanged, and all activities must be completed before this date in order to be eligible for expenditure. Currently more than 88% of the credit funds have been disbursed and LGED were advised that reimbursement of expenditures incurred on or before the closing date of June 30, 1997, would be allowed beyond a period of four months after the credit closing date up to October 31, 1997.

Preparation of Implementation Completion Report (ICR)

17. The mission reviewed the data made available by LGED and requested to provide the following additional data: (a) statistical tables; (b) sector specific data including road expenditures, budget allocations, market tolls and other related information; (c) economic re-evaluation so that its analysis could be compared with the economic evaluation carried out at the time of the project appraisal; and (d) future plan of operation as provided in the ICR guidelines para. 34 with emphasis on technical, financial and institutional arrangements to ensure effective project operation.

Borrower's Contribution to ICR

18. The mission advised LGED that in accordance with the "General Conditions Applicable to Development Credit Agreements", the Borrower is required to prepare its own and submit this to the Bank By August 15, 1997. The evaluation report/summary would be attached unedited to the ICR and will include:

- (i) an assessment of the project objectives, design, implementation, and operation experience;
- (ii) an evaluation of the borrower's own performance during the evolution and implementation of the project, with special emphasis on lessons learned; and

- (iii) an evaluation of the performance of the IDA and any other co-financiers during the evolution and the implementation of the project, including the effectiveness of the relationship among the, borrower, the IDA, and co-financiers, with special emphasis on lessons learned.

C. SUMMARY OF MAIN FINDINGS AND ACTION AGREED

Next Steps

19. The following next steps were agreed:

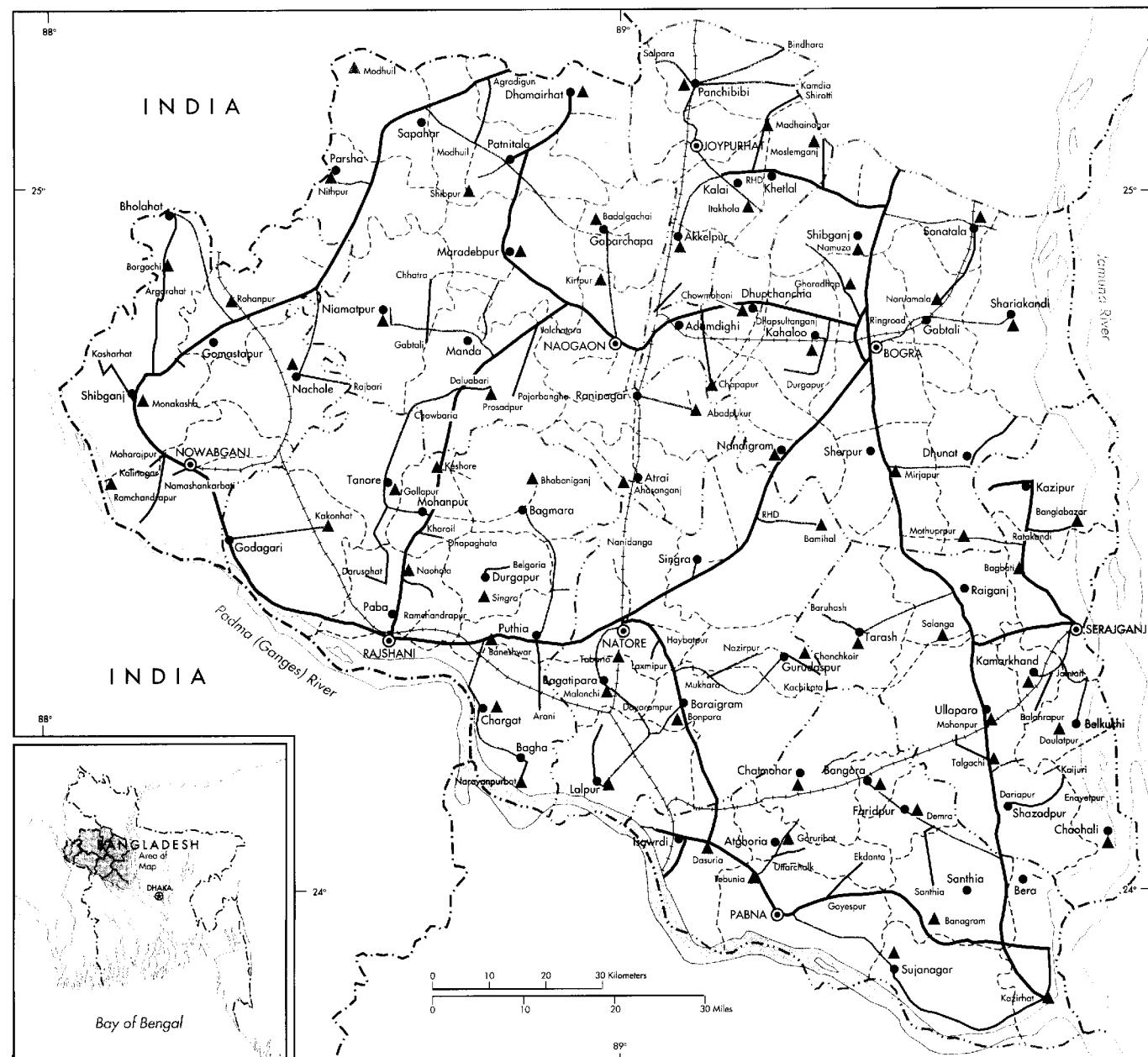
- (a) Make final payment to contractors and consultants and submit withdrawal applications by August 31, 1997.
- (b) Observe target dates for ICR:
- | | |
|---|---------------|
| - Prepare information needed for ICR | July 31, 1997 |
| - Send economic reevaluation | July 31, 1997 |
| - Send to IDA GOB's contribution to ICR | Aug.15, 1997 |

Mohiuzzaman Quazi
Mission Leader

Date: July 29, 1997

ANNEX E

MAP



BANGLADESH RURAL ROADS AND MARKETS IMPROVEMENT AND MAINTENANCE PROJECT (RRMIMP)

This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.